

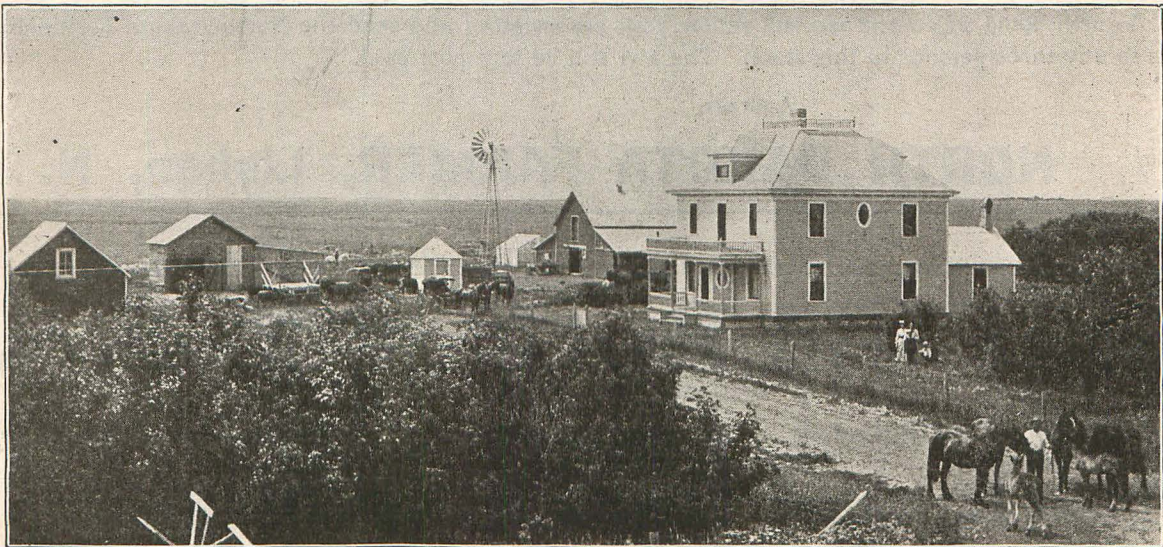
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Vol. 13 · No. 5 Lisbon, North Dakota, November 15, 1911 50 Cents A Year

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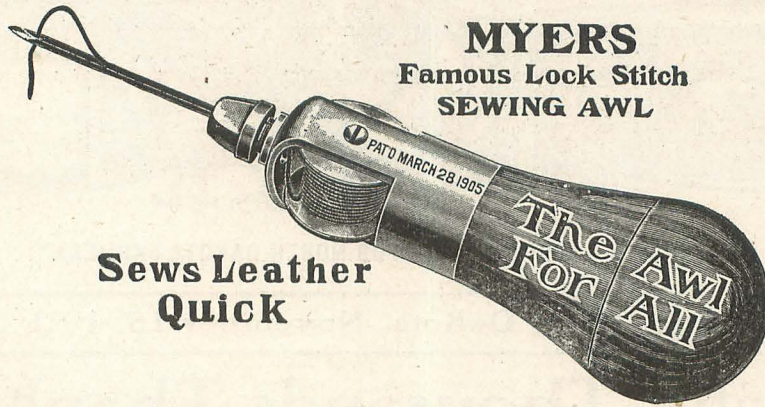
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THE NORTH DAKOTA FARMER

Vol. 13, No. 5

LISBON N. D., NOVEMBER 15, 1911

50 Cents a Year

Corn Growing in the Northwest

By Prof. J. H. Shepperd, N. D. A. C.

Written for Deere and Webber's Booklet "Authorative Talks on Farming"

The corn crop has come to be indispensable in the small grain rotation systems of the northwest. Since weeds have made inroads into this new agricultural country, a cultivated crop has become a necessity as a means of keeping them in check without an entire loss of the time

upon it very largely for carrying his work horses and stock cattle thru the winter. Many have also come to use their corn fodder to carry their grass fat beef past the range fat competition by holding them up on corn fodder, until sometimes in the month of December. Some others

been thoroly ripened. Soft corn does not have as much feed value per acre as ripe corn, but the sheep gain as much per week on a field of soft corn, notwithstanding the fact that they put on less per acre of the crop.

Baled Fodder on Chicago Market

On the Chicago market shredded corn fodder in bales brings as high a price as baled timothy hay. This indicates that horse men have found that corn fodder is a satisfactory roughage ration for their class of stock. As horses are the most particular class of stock to supply with roughage, the fact that corn fodder is satisfactory to them, would seem to me to



"Corn is surely making its way in the northwest. It is fitting into the small grain rotation more completely as the land grows older and weed pest increases."

used in destroying the weeds. On land which is not particularly weedy, the change to a crop of corn, well cultivated, stimulates the wheat and flax following it in a very marked way for the first two seasons and notably for the third.

Good Feed for All Livestock

Corn has the further advantage of furnishing a vast amount of excellent roughage intermixed with a considerable of grain for carrying farm livestock thru the winter. After the corn grower on the quarter or half section farm has learned to feed and handle corn fodder, he depends

have discovered that they can successfully fatten a band of sheep which had been folded on stubble fields for the early fall prior to the time of plowing down the stubble by turning them into a field of standing corn where they are allowed to feed it off as they choose. It puts the sheep in excellent condition for market, requires no labor in handling the corn, and in the hands of a good sheep man proves an extremely satisfactory and profitable way of marketing the crop. I am told also that sheep thrive as well on soft corn as they do on that which has

standardize it as a feed aside from the legumes, such as alfalfa and clover, which are so highly prized for feeding cattle and sheep.

Put the Stable Manure on Corn Ground

The stable manure which is to be applied to the rotated fields of the northwest can most satisfactorily be spread on the land which is to have corn the following season. The only other place that it can be well put in a northwestern rotation is on the grass field at the time the land is in that crop. It is less satisfactory in that

instance as the litter from the stable will in part be gathered up with the hay crop and become a nuisance to the hay maker. The stubble land which is to be put into corn the following season can have the manure spread upon it and then plowed under as the stubble is turned, and the season of cultivation in corn will thoroughly incorporate this manure with the soil, leave it in excellent condition for the following grain crops, and stimulate the corn growth during the season when that crop is growing. Corn is what is called a gross feeder and makes better use of a fertilizer which is partially decomposed and one that is not well distributed than do the small grains.

Fall Plowing Best for Corn

If the time will permit it is much better to fall plow land for corn than to leave it for spring plowing. When spring comes, as soon as the ground is in good condition for cultivation, the corn fields should be given a harrowing, in order to save the moisture that would otherwise evaporate, to cause it to warm up and to induce the weed seeds which are near the surface to sprout, so that they may be destroyed before the corn is planted.

Time to Plant Corn

Do not plant the corn until the ground is well warmed up, as corn is a tropical plant really and does not start growth un-much later than the small grains. The old Indian rule for the time of planting can scarcely be improved upon. It was, plant corn when white oak leaves are the size of a squirrel's ear. The scientist, I believe, has found by experimenting that corn should not be planted until the ground is 50 to 55 degrees F. below the surface, and this agrees exactly with the Indian rule, for when that temperature of soil occurs, the leaves of the oak will be about the size described.

It is very important that the soil should be worked into a good seed bed when the corn is planted and that the weeds be entirely destroyed at that time.

The Kind to Plant

In the northwest the Golden Dent, Northwestern Dent, Minnesota King, Minnesota No. 13, and Rustler's White Dent, are the popular dent varieties. Among the flints; Mercer, Triumph, and Dakota are successful and popular. I have named the dents in about their order of earliness, and of the flints the Dakota is the smallest and by far the earliest of the list. In North Dakota we have had school boys ripen corn so near the Canadian boundary line that they could have thrown the ears across into Canada as they husked them. The Minnesota 13 and Rustler's White Dent are varieties which compare well with the medium-sized strains of the corn belt and answer well for the more southern and warmer soiled districts. In the next less favorable situation, Golden Dent, Northwestern Dent and Minnesota King find suit-

able environments. Beyond these and reaching nearly to the Canadian boundary, if indeed, not reaching entirely to it, Mercer flint and Triumph are able to ripen and give good returns.

Plant It in Check Rows

In this northwestern country, with rare exceptions, it is much better to plant the corn in check rows, so that it may be cultivated each way. It is an open secret that the farmers and farm workmen of the northwest are not skillful at cultivating corn; if not planted in hills according to the check row system, it is almost sure to be a weedy crop. Pains should be taken to screen out the small seeds, so that it will be dropped by the planter in uniform sized hills. Four stalks to the hill is the best thickness to seed it in my opinion for this country.

Use the Harrow or Weeder

The harrow or weeder should be used very regularly on corn fields after planting until the corn is about five inches high. There are several advantages to using the harrow or weeder. First of all, it cultivates in the row and in the hill, as no one can do with the cultivator without covering the young plants; and, as a consequence, it keeps the hills free from weeds during this early state. After each shower, as soon as the ground is dry enough to work well, the harrow or weeder should be over the corn field. It can be harrowed at any time after the seed is in the ground, without material injury to the crop. After the corn has passed the stage of harrowing, the cultivator should be run thru it once every week or ten days, until it is too high to pass under the cultivator beams. Like the harrow the cultivator should follow each shower as soon as the ground is dry enough to work.

After the corn has reached too great a height to be cultivated, it requires no further attention until fall. If it is to be used for ensilage, cut it when it is in the glazing stage, provided it reaches that stage before there is danger of a killing frost. The frosting of corn does not hurt it particularly for ensilage making, except that it makes it dry up in the course of two or three days and dry corn does not work up satisfactorily for ensilage. When the time for frost approaches, I regard it the best policy, to set about the ensilage making and get it into the silo in time to avoid this drying effect, which might come on before the silo could be filled.

The Effect of Fall Frosts

Corn that is to be cut for fodder is not injured by frost, except that the rains bleach it badly after it is dried and the binders and shockers cause heavy loss from the breaking up and blowing away of the leaves which represent the most palatable and digestible portion of the entire plant aside from the grain.

Saving Seed Corn

Seed should be saved from the breeding plot at least before the fodder is cut.

Every man should have a breeding plot on his farm to produce him his seed corn for the year following. This seed plot can very well be the first row on one side of his regular corn field, or in the middle of it, or wherever he can find the most suitable place. By passing thru the field before the corn is harvested, the man selecting the seed has a chance to take the entire plant into consideration. He can see whether the stalk is large or small, tall or short, whether the ear is attached high or low, and any other point that he may have in his mind that he would like to bring into his entire crop. This should be dried out thoroughly before freezing weather comes. Thorough ventilation of the room in which the corn is being dried is very essential. If it is thoroughly dried before freezing weather comes, the grower is assured of a good supply of strong growing seed for the next season.

Make Large Shocks

If the fodder is to remain in the field, make the shocks as large as practical, as the outside layer of stalks lose the greater portion of their feeding value. If it is stacked, make sure that it is dry enough to stack and build up in narrow racks to avoid undue heating. Stalks of corn are so large and full of sap, that they are very slow in drying out thoroughly and are very bad about heating. Great care should be taken in all handling of corn fodder, whether it is stacked in the bundle or shredded, as heating will be found to occur frequently when it is not anticipated.

Corn left in the shock and hauled as fed is, of course, entirely safe so far as heating is concerned, but the handling of such fodder is frequently very disagreeable in the winter season, particularly when the snows are heavy and the shocks become imbedded in snow and ice.

To Keep Shredded Fodder From Heating

When the fodder is shredded, it can be fed and handled exactly like hay. All of the trouble from the heavy stalks being in the mangers or even thick on the yard when it is fed in the open is avoided and an excellent grade of provender is supplied. Some have surmounted the difficulty from heating with shredded corn fodder, by building it up in a stack with oat straw by spreading first a layer of shredded fodder and then a layer of straw, having each from a foot to eighteen inches high when settled. The dry straw absorbs the moisture from the moist corn fodder and prevents any possibility of heating. I am told that the straw takes on the flavor of the fodder to so great an extent that the stock eat it with a considerable degree of relish compared with the way in which they ordinarily take to a straw diet.

Few people in the northwest consider it profitable to husk their corn and instead feed the ears right with the fodder in the husks. This plan saves a vast amount of

THE NORTH DAKOTA FARMER

labor and except where stall fattening of cattle or sheep is desired or where hogs are to be fattened upon it, I can see no special gain from husking it, even if no charge is made for doing the work.

Corn is surely making its way in the northwest. It is fitting into the small grain rotation more completely as the land grows older and weed pests increases and it is in addition supplying a large amount of the feed necessary to carry on the mixed farming which is proving more profitable than the strict production of small grain in this intensive cereal and flax producing section of America.

DUNN COUNTY FLAX KINGS Their Grain Tank Train

The marketing of 25,000 to 30,000 bushels of flax raised an average distance of 40 miles from any railroad, is quite an undertaking and without the use of a gasoline traction engine, known as a Big Four, it would be practically impossible. The breaking of raw prairie land this season, growing, harvesting and threshing of such a crop is even more astonishing.

of Dickinson made a special trip Wednesday morning to photograph the outfit which was taken in the street at Taylor, just south of the McClure grove.

C. W. Colgrove of Minneapolis and J. B. Dickson of Mt. Vernon, S. D., landed in Stark county on March 27, and commenced breaking operations on April 17. Mr. Dickson is secretary and manager of the Dakota Development Co., incorporated under the laws of South Dakota, and is on one side of the road and Mr. Colgrove on the other in northern Dunn county, just west of Halliday and not far from Bailey. They are not in partnership, each having his own machinery and crew of men, but they have been in a position to help each other a great deal. Mr. Colgrove had 1,065 acres in flax this year and figures an average yield of 12 bushels to the acre, some of the land giving a yield of 18 bushels. From 100 acres threshed out the first of the week the average was 14 bushels.

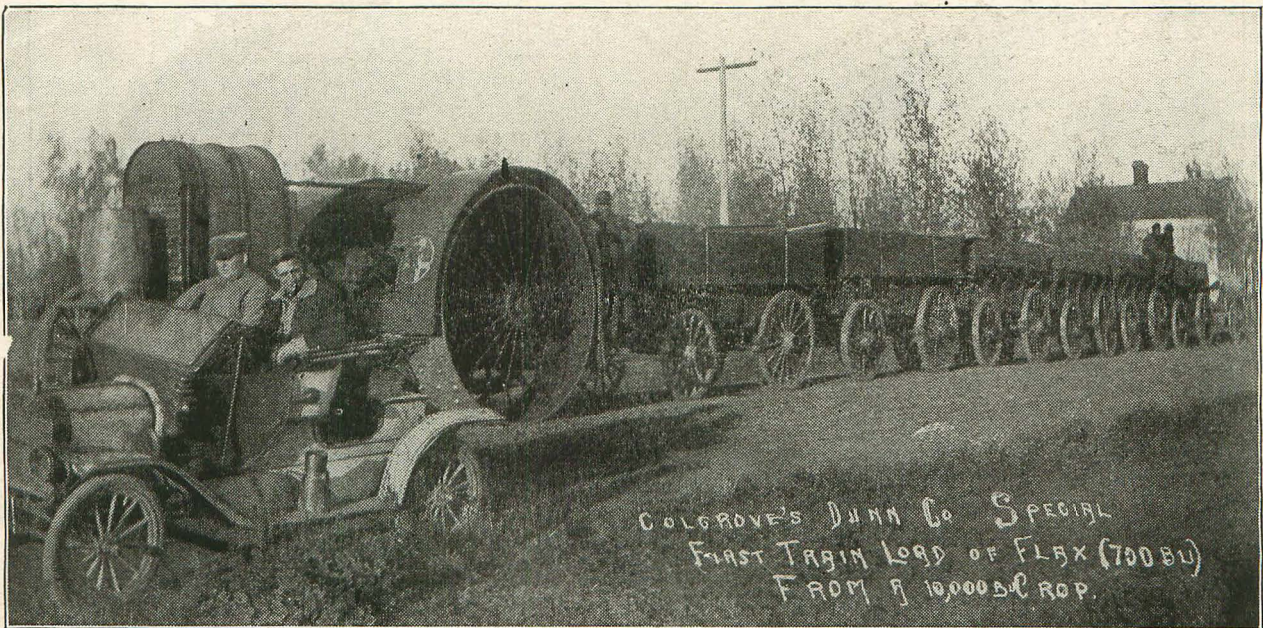
J. B. Dickson has 1,400 acres of flax and so far as can be seen the yield will be the same.

Mr. Dickson has two Big Four engines

It requires about 24 hours on good roads to pull 800 to 900 bushels of flax into Taylor, the empty tanks being hauled back in about 17 hours. The cost of hauling this grain is 7 cents per bushel. Mr. Colgrove attends to the marketing, going to Taylor in his auto at about the right time to overtake the grain tanks as they near the vaillge. The grain train is sent over the Knife river at the J. K. Slack crossing. Mr. Dickson superintends threshing and loading operations at the other end. It will probably require until November 15 to get this crop threshed and delivered, as two to three trips is all that can be made in a week.

Mr. Colgrove states that in his opinion, flax is certain to advance in price and he does not expect that they will sell much at present. However, the crop of these two great farms will be delivered in Taylor and arrangements made for storing the same in Minneapolis.

Mr. Colgrove says that the success at their farms can be attributed to deep engine plowing. The plows were put down 5 inches. He believes in packing the land but does not care to cut the



Overland Flax Special

This is the work which C. W. Colgrove and J. B. Dickson are so successfully bringing to a close this fall and the accompanying picture shows their first train of grain tanks bearing 700 bushels of flax which was transported to Taylor the first of last week and which sold at \$2.20 per bushel.

The gentleman in the left side of the automobile is C. W. Colgrove, with W. W. Stackhouse at his right. The engineer who hauled the six grain tanks and one oil tank into Taylor stands on the foot board of his Gas Tractor. A. J. Osborn

and one of these engines is being used in delivering the grain at Taylor. Mr. Colgrove puts up a separator against the engine and to this extent the two big farm operators are working together in getting their product to market. They have the same kind of machinery thruout, each using five Deering binders, cutting from 70 to 75 acres of flax per day. They thresh from the shock, using seven teams in the field and run out about 800 bushels of flax in a day. The Colgrove place has a crew of 8 men and the Dickson farm 12.

sod. He used a float ahead of his seed drills. Eight quarts of flax were sown to the acre. Mr. Dickson plowed to the same depth, disked his land and drilled in 14 quarts of flax to the acre. They commenced seeding the 13th of May and finished on the 16th of June, there being but one day's difference in the time of closing on the two places. The yields, so far as can be ascertained at this time, are the same.

Mr. Colgrove expects to crop at least 3,000 acres next year, which will necessitate one or more engines on his land.

The Dakota Development Co. may seed as high as 4,000 acres another year. Mr. Colgrove says that for his wheat on flax ground he will disk three times, and the third season when he plows the land again he will turn up an inch of new soil.

It must be remembered that everything on these farms is done with gasoline engines. Day and night crews were operating during the plowing season. The best of engineers and skilled help were employed thruout and in addition to a good salary the engineers were given a bonus of \$5 per day when they made the plows turn 30 acres in 24 hours, and they came in for the extra a good many times.

Mr. Colgrove has a cow, while Mr. Dickson buys his milk from a neighbor. Each gentleman has a saddle pony and an auto, and their present plan is to put the places in charge of one person for the winter while they go east.

North Dakota Dry Farming Association

Second Annual Meeting to be Held at Dickinson, N. D., December 7th and 8th

This association was organized primarily to extend the knowledge of farming methods in those areas of the state where the conservation of moisture is a matter of importance. Where the rainfall is nearly 15 inches special care must be taken to utilize the moisture and it is the aim of the Dry Farming Congress to emphasize this fact and to extend knowledge concerning it.

The amount of our rainfall has a profound influence upon our methods of farming, and therefore it is within the province of this association to treat prac-

tice the conservation of moisture, at least in the major portion of the state. But this does not mean that any one line of farming should be followed, to the exclusion of others.

It is becoming realized by us all that mixed farming is generally to be most successful in this state. This being the case, particular attention must be paid to live-stock. In order that we may get the best from the live stock close attention must be paid to the growing of forage and grains to be feed them. This leads immediately to a consideration of corn, alfalfa



Business Street of Mohall, a Live Town in Northwestern North Dakota

The cost of breaking and cropping these farms this season has been \$5.80 to \$6 per acre. There was never a breakdown that amounted to anything during the spring, as both parties had provided themselves with all kinds of extras. They figured that every hour's delay in the breaking season would cost \$10 and that it was best to safeguard in every way possible.

tically all questions that have to do with the farm. The idea has been common that the term "dry farming" is associated only with grain production, but nothing could be farther from the truth.

It is the aim of those interested in good farming to see every farm in the state placed on a rational and profit making basis. In order that this may be done, strict attention must be paid to

grasses, and to other forage crops, as far as they are successful.

It has been found that our soil is well adapted to small grains, and there is no reason why the growing of these should not form an important feature. A successful grain crop provides good ready money.

Along with live stock and grain farming the fruit patch and garden should be

gaven itention. We have a wealth here which is not often well considered. The tin can farmer used to be an important feature in North Dakota, but by this time he ought to be as much of a fossil as the mammoth found in the Bad Lands. It is feared, however, that such is not the case. Gardening may be made successful in North Dakota every year, and but few realize the wealth of food a well kept garden produces. Perhaps some of the farmers' wives have something yet to learn how the garden products may be best prepared for winter. Modern methods allow the farmers' family to have green vegetables, either fresh or "put up," the entire year.

We do not realize what wealth we have in the line of fruit, if the right kinds be grown and the right methods pursued. In the early attempts to raise fruit too little regard has been paid to our rainfall and other climatic conditions. We have endeavored to grow fruit unadapted to the region. All of the items mentioned above are dependent directly and immediately upon the rainfall that we get. The Dry Farming Congress to be held at Dickinson will discuss these different topics fully and adequately as the time permits.

L. R. Waldron,
Sec. N. D. Dry Farming Association.

SHALL WE PRACTICE DRY FARMING WHEN THERE IS PLENTY OF RAIN?

Pres. J. H. Worst, N. D. A. C

The question is sometimes raised, "Shall we practice dry farming when there is plenty of rain?" Most assuredly. The time to conserve moisture is when there is moisture to conserve. A farmer remarked to me the other day, "I have got the moisture on my farm down to a depth of more than three feet, already." That farmer's adea is exactly right. He is conserving moisture for next year's crop while his neighbors are allowing the moisture that has recently fallen in abundance to go its usual way, according to the laws of chance. Next spring, his neighbors will plant their wheat and other small grain and depend upon the clouds to furnish moisture as the grain may need it. This farmer will get just as much rain from the clouds as they and will, in addition, have a large quantity of water stored up in the subsoil to nourish the crop, should a dry spell occur during the growing season. And that dry spell is very apt to come. I will venture that this particular farmer will have a big crop next year whether his neighbors do or not. If they get a big crop, he will get a bigger crop.

It has been fully demonstrated that a considerable portion of the rainfall of any one year can be conserved and carried over, in the soil, for the benefit of the

next year's crop. Where the average rainfall is 18 inches, it should be an easy matter to carry four or five inches of autumn rainwater over the winter for next season's crop. Four inches of water represents approximately 450 tons of moisture per acre,—a sufficient quantity to nourish the growing crop during weeks of protracted drought.

I am convinced that by means of suitable cultivation, which includes deep plowing, the bogie of drought will be forever dispelled in this state. There is absolutely no necessity for a single crop failure in North Dakota on account of drought. The fault is not with the soil, nor with the climate nor with the plants; it is with our system of farming. As long

as we apply humid methods to semi-arid conditions, we may expect repeated crop failures, or partial failures that will materially lessen the profits which farmers should realize from their business.

It requires approximately seven dollars per acre to grow a crop. This includes interest on investment, cost of seed, wear and tear of farm machinery, labor, etc. By adding one additional dollar's worth of labor to each acre, there is little question but that the average profits would be doubled. In other words, as much profit should be realized from the one additional dollar's worth of labor as is now realized from the seven dollars worth of unavoidable labor and investment. Consequently if farmers would devote one-third of their

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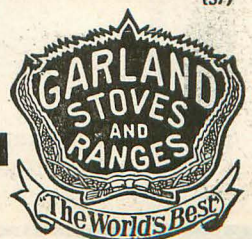
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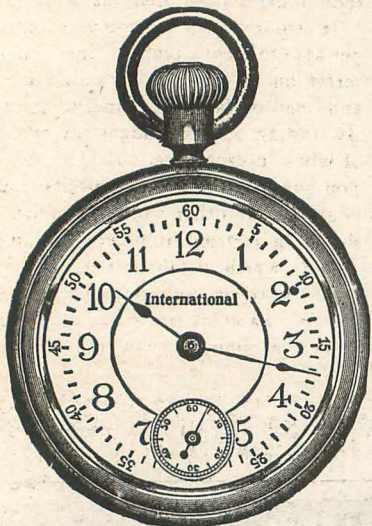
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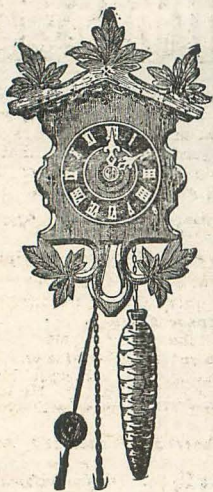




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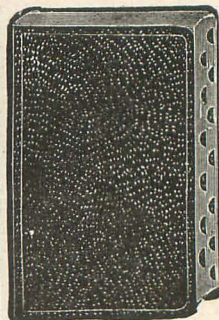


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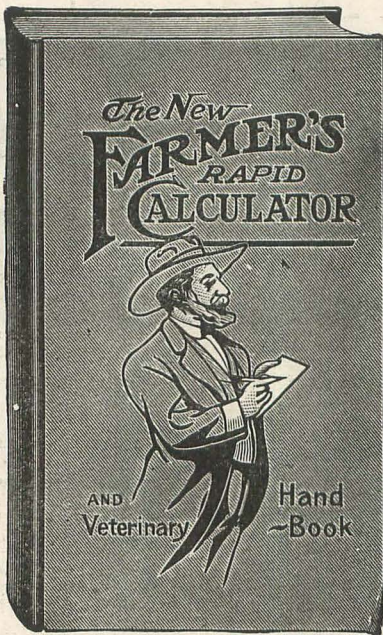
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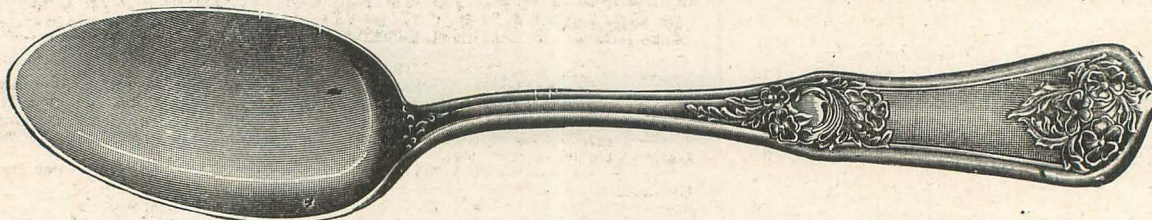
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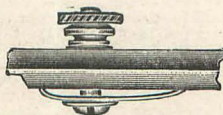
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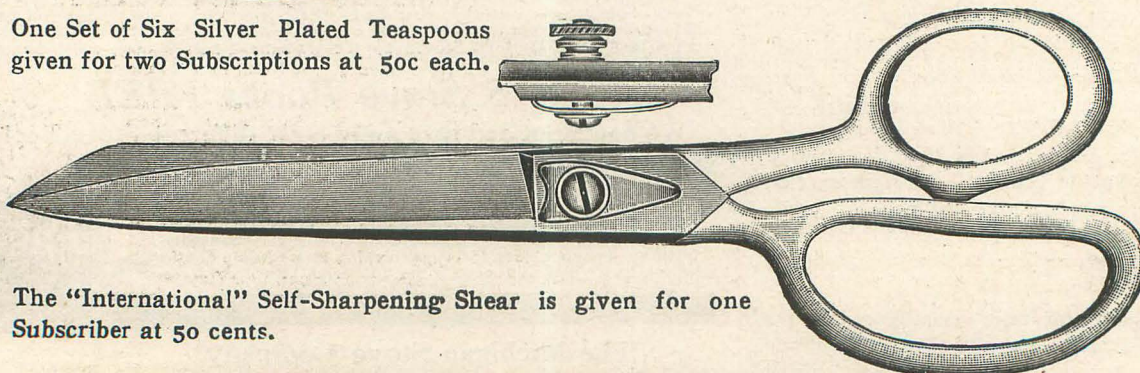
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land to the growing of corn and alfalfa, neither of which interferes with the time and labor employed in farming wheat, and put one-third more labor, thus made available, on only two-thirds as many acres of wheat, they would grow more wheat than where they spread their energies over the one-third larger area. The corn and alfalfa fed to livestock would insure them a large additional income, and one that is not often adversely influenced by climatic conditions, while the fertility deposited upon the farm resulting from freeing the corn and alfalfa to live stock would vastly improve the productiveness of the soil. Corn and alfalfa usually can be attended to when the wheat needs no care, thus distributing the labor more equitably thruout the season.

Another thing, shock-threshing is generally bad business, for the reason that all cannot thresh at once when the grain is ready for the machine; consequently, all who cannot thresh early stand a good chance of having their grain injured in the shock and also are hindered from plowing until their grain is threshed. Fully half the farmers are thus hindered from plowing early, many of them being compelled to postpone operations until the following spring. Better to stack the grain as soon as fit and start the plow.

Plow deep and follow the plow with a drag. The drag will conserve more moisture than will get into the soil from melting snows. Besides water thus conserved is where it is needed instead of on the surface where it will speedily evaporate.

GENERAL REVIEW OF CROP CONDITIONS Nov. 15, 1911

The harvest of 1911 have been practically completed and preliminary estimates made of the production of most of the important crops, from which it appears that the aggregate production of crops in 1911 is approximately 7.9 per cent less than the crops of 1910 and about .4 per cent less than the average annual production of the preceding five years.

The preliminary estimates of production in 1911, with comparisons, of such crops as have been estimated quantitatively by the bureau of Statistics, with on November 1, 1911, and November 1, 1910, are as follows:

Crops		1911 prelim'ry	1910
Corn	bu.	4,776,301	3,125,713
Wheat	"	655,516	695,443
Oats.	"	873,641	1,126,765
Barley	"	145,951	161,241
Barley	"	145,951	162,227
Rye	"	30,677	33,039
Buckwheat	"	17,051	17,239
Flaxseed	"	21,692	14,116
Potatoes	"	281,735	338,811
Hay	tons	46,969	60,978
Tobacco	lbs.	790,663	984,349

The production of other crops in 1911, expressed in percentage of the average production in recent years, (not compared with full crop) is estimated as follows:

Apples 126.3; pears 110.8; watermelons 105.1; grapes 102.7; cantaloupes 101.8; peanuts 99.3; asparagus 97.7; alfalfa 96.1; beans 95.1; kafir corn 95; cranberries 94; tomatoes 93.9; cabbage 93; raspberries 91.

Onions 89.7; millet 87.2; strawberries 83.6; blackberries 83.5; cloverseed 82.6;

millet seed 82.1; peaches 80.3; hemp 78.2; clover hay 68.1.

Yield per acre compared with average yield, sorghum 102; sweet potatoes 101.2; hops 90.4; broom corn 85.1.

Condition, compared with average conditions, at or near time of gathering:

Sugar cane 109.8; cotton 106.9; lemons 103.9; sugar beets 102.6; oranges 101.6; rice 99.

This year's total crop production in the western states, based upon preliminary

Be Sure to Visit The Northwestern Land Products

Show *At St. Paul*
Auditorium

Dec. 12-23, 1911

The first annual Exhibit of the newly formed Northwestern Development League of the "Prosperity States of America," Minnesota, North Dakota, South Dakota, Montana, Idaho, Washington, Oregon and Alaska. The Land Products Exhibition in Saint Paul is one means adopted for carrying out the objects of the

Northwestern Development League

It will be a show of the Northwest States, by the Northwest States, and for the Northwest States, and not to promote private or corporate interests.

Saint Paul has been selected as the place for the first exhibition under the auspices of the Northwestern Development League, primarily because of the fact that St. Paul and Minneapolis, the Twin Cities, form a great gateway thru which much of the traffic of the Northwest passes, and through which move the thousands of people who go to and fro in the Northwest, bent on pleasure, health or the search for a home.

Convenient DeLuxe trains several times daily to and from St. Paul and Minneapolis via the

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Agent
Lisbon, N. D.

estimates, is given below; the first figure after each state indicates its total crop production in 1911, relatively, as compared with 1910, 100 representing last year's production; the second figure indicates production in 1911, relatively, compared with the average production in years 1905-09, 100 representing the average production for the five years.

Production 1911

States	1910	1905-09
Ohio.....	92	100
Indiana.....	89	99
Illinois.....	84	98
Michigan.....	94	105
Wisconsin.....	111	97
Minnesota.....	84	92
Iowa.....	82	91
Missouri.....	77	90
North Dakota.....	213	93
South Dakota.....	56	56
Nebraska.....	80	75
Kansas.....	76	73
Montana.....	149	198
Wyoming.....	101	54
Colorado.....	88	82
Idaho.....	124	150
Washington.....	127	115
Oregon.....	103	113
California.....	93	108
United States.....	92.1	99.6

IS FERTILITY NECESSARY?

At the present time when there is so much discussion as to whether fertility is needed to grow crops or not, the following extract from an address by Prof. J. H. Shepperd before the N. D. Academy of Science is interesting:

England is credited with producing fifty million bushels of wheat per year. She imports two hundred million bushels of wheat and takes pains to import that as wheat instead of as flour for the sake of getting the fertility which is contained in the bran and shorts portions of the kernel almost exclusively. She imports one hundred million bushels of corn and nearly a billion pounds of oil cake per year. In addition to this mammoth annual source of fertility she imports large quantities of phosphorus. These importations of grain result in the production of a vast quantity of stable manure in Britain which is lavishly applied to the fields which are planted to grain.

Dr. Bernard Dyer, in his American lectures on the results of investigation on the Rothamstead soils in discussing the Boradbank wheat plat that has produced a crop of wheat each year since 1844, after stating that it had been given an annual application of 15.7 tons of farm manure each year during that time, uses the following sentence: "It is to be borne in mind, however, that the quantity of manure used in these continuous wheat growing experiments is on the yearly

average far less than would be used in practical agriculture on any of the rotation systems."

This recalls to my mind the statement of our Scottish herdsmen at the agricultural College, who in conversation with me about the method of top dressing pasture and meadow lands in Scotland, remarked that the Scottish farmer did not put on his stable manure with a pepper box and seemed to have the idea that the quantity applied here is very light when we do make application of that product to our lands. In addition to this, England began importing Guano as early as 1855 at the rate of two hundred thousand tons annually from South America and the sea islands. The Guanos contain from 15% of nitrogen and 5% phosphorus to about 1% nitrogen and 15% of phosphorus.

Aikman in discussing manures wrote in 1894 of the use of bones for fertilizers in England. He states that they first employed bones for fertilizers in 1774 and that their use has steadily increased ever since. He also states that their popularity among farmers is unrivaled.

Baron Liebig raised a warring protest against their using bone in such large quantity, saying that England was robbing all other countries of their fertility. England is said to have turned up the battle fields of Leipzig, Waterloo and of the Crimea and to have carried away from the cacaotombs of Sicily the skeletons of many generations. Aikman sums up his uncanny statement in these words: "Annually she recovers from the shores of other countries to her own the manural equivalent of three million and a half of men." England also supplied her soil with one hundred thousand tons of slag phosphorus per year before the close of the last century and at the present time is credited with using three hundred thousand tons per annum.

By this process of gathering the world's fertility and heaping up on the "tight little island" regularly and systematically for centuries and of shipping nothing out of the country that has fertilizing value, she bears the strongest evidence of what fertility, coupled with her heavy rainfall and her humid air, which allows the minimum escape of moisture in the production of a ton of dry material in a crop, will do for the crop yields of a country.

Germany shows much the same condition, tho a somewhat lighter yield than England and while she has ranged less widely in gathering fertility, she ships out of her country little besides sugar, which commodity contains none of the elements of crop fertility.

Denmark sells butter as almost her exclusive export product, a material which at the commercial rates of fertilizers as they are sold on the market carries off 48 cents worth per ton while wheat bran on the same basis shows a value for its fertilizing ingredients of about \$9 per ton.

NO MONOPOLY IN SILOS

The Iowa Agricultural Experiment Station has set out on a nation wide hunt for a home-made round silo built in 1898 or earlier and incorporating some of the essential features of the patented structure of the present day. M. L. King, agricultural engineering experimentalist of the station, has offered a reward of \$50 for the first definite information about just such a silo. He expects also to make a trip to several of the older dairying districts of the United States for a personal search for pioneer silos.

Back of this unusual hunt is the claim of the wooden silo manufacturers that American farmers cannot build round silos of any type or material without first paying tribute to them in license fees. They claim a patent monopoly and they have organized themselves to enforce it. In the past summer of extensive silo building they sent out thousands of letters warning farmers who were putting up home-made silos and threatening suit for infringement.

This claim of a silo monopoly concerns the Iowa station because two of its experimenters, Prof. J. B. Davidson and M. L. King, designed a successful hollow tile silo three years ago which they dedicated to the American farmer and his free use. This silo has been made the special object of attack in Iowa where nearly a thousand are in use. Letters warning farmers building these silos have been sent out and intimations of damage suits have been frequent. Whenever appealed to, the station has made the positive statement,

WANTED. Canvassing Agents at once for the sale of **Compendium of Everyday Wants**, the book of general necessity, price \$1.50; also for **The Devil's Bride**, a wonderful religious allegory, price \$1.00. Either outfit sent postpaid for 10 cents. 50% commission to agents. Big sellers. Address **A. B. KUHLMAN**, Publisher, 138 West Lake St., Chicago, Ill.

For Sale

Fine Farm in the Best Watered Valley in Montana.

Forty acres under plow. A never-dry river runs across corner. County Road runs diagonally thru land. Irrigation ditch north of land, if you care to use it. Five miles to railroad. One of the finest apple orchards in world near mouth of valley. 400 acres plowed. Fine for grain, flax, etc. 225 acres grazing land. May divide if desirable.

NO CROP FAILURES

Inquire of

R. M. SCHMERLER

17 South Sixth Street, Mpls. Minn.

based on investigation, that neither brick, tile nor masonry silos in any way infringe upon wooden silo patents. After further investigation the station has taken the new stand that it is doubtful if the manufacturers really have a monopoly, as they claim, on wooden silo building.

"We have good reasons to believe," says Mr. King, "that the special features of wooden silos for which patents are claimed were used in some of the silos built prior to the date of the patents, June, 1899. Those features are the continuous door, reinforced doorjamb, door jamb braces and devices for holding the doors in place. Round wooden silos were in use long before 1899. We want additional information about them.

"The Iowa station is not setting out to fight anybody. It merely wants to make certain about these disputed points and to protect the farmers in Iowa and in every state in what it considers their right to build round silos of brick, tile or masonry, and possibly of wood, also."

KEROSENE ENGINES REPLACING GASOLINE

Our many readers who are about to buy farm engines will be pleased to know that the high price of gasoline is nothing to become alarmed about. As a matter of fact, gasoline is not and never was as good an engine fuel as common kerosene (coal oil). Two pints of kerosene, under actual test, give more engine power than three pints of gasoline. So why worry about the price of gasoline, so long as kerosene remains so cheap?

Kerosene, besides being cheaper and more powerful, pint for pint, than gasoline, is much safer.

It never explodes. Nor does it waste by evaporation. Kerosene is more convenient to buy, too. You can get it at any store, cheap, while gasoline is always high, and not every storekeeper handles it.

A great many of our readers are taking advantage of the Detroit Engine Works' offer to ship a Kerosene Engine on 15 days' free test to prove that kerosene beats gasoline in every way. We suggest to all our readers that they, before buying a farm engine of any description, look into the kerosene engine.

A man with the "Amazing Detroit" not only has an engine especially equipped for kerosene, but when necessity arises he can use benzine, distillate, alcohol or gasoline. This engine sells at a very low price, so anybody can easily afford one. It comes ready to run and

is a perfect engine for pumping, sawing, threshing, churning, separating milk, grinding feed, etc.

A postal mailed today to the Detroit Engine Works, 385 Bellevue Ave., Detroit, Mich., brings catalog, prices and full explanation of 15 Days' Free Trial Offer.

FARMERS' BANK OF PROSPERITY Read before the Bankers' Association.

State of North Dakota
At close of Business—June 28, 1911.
RESOURCES

Loans—The crop.
Reserves—Cows, Hogs and Poultry.
Cash—Grain, stock, butter and eggs.

LIABILITIES

Capital—Soil fertility, buildings, stock and machinery.

Surplus—Manure applied to land.
Deposits—Corn, alfalfa and stock increase the deposit of fertility in soil and filthy lucre in the pocket.

Check—Every weed in a field draws a check against the crop, one-half pound of dried weeds to the square yard reduces the crop of wheat 20 bushels per acre.

Bills Payable—Shallow plowing and continual grain growing.

"23" FOR "1F"

Discount the uncertainties of farming by Preparing a good seed bed.

Conserving the moisture.

By selecting and treating the seed.

By keeping good stock.

By keeping up the fertility and humus of the soil.

By keeping out weeds and plant diseases.

Increase your deposits by encouraging—

The Agricultural College.

The Experiment Station.

The Farmers' Institute.

Farmers' Clubs.

The reading of bulletins of the experiment station and agricultural papers.*

And secure an agricultural library from Bismarck for your patrons.

NUGGETS

Interest—The plant in well-tilled soil pays big interest.



OUR TRAPPERS GUIDE FREE

Not a CHEAP, but a VALUABLE Book with pictures of all animals, their tracks and signs, game laws and valuable information FREE. Don't go through another season without it, as it will mean dollars to you. Our "BEST" BAITS, recommended by the U. S. Forestry Service, will increase your catch. We are the originators of sending circulars to Trappers direct.
WELL BROS. & CO., Box 84 Ft. Wayne, Ind.
The Square Deal House, where you get those good returns

Clipping Coupons—Harvesting alfalfa for hay and seed.

Security—Moisture stored in the soil.

Sight Draft—Hot winds, never drawn on crop grown on well tilled soil.

Watered Stock—Spreading the work that should go on a quarter section.

Velvet—Second and third crops of alfalfa.

Insurance—Rotation of crops.

Silent Partner—Alfalfa and clover germs.

Convention—Getting together to learn from each other and usually finding that the fellow worker is an A. No. 1 fellow and knows many things we do not.

*Why not "encourage" the state farm paper, *The North Dakota Farmer*? (Pub.)

REVISING THE NATIONAL ANTHEM

At the request of King George the venerable Dean Hole has been revising the British national anthem in order to bring it just a little more up to date and in harmony with the modern spirit. The Dean has improved it materially as far as he has gone by substituting lines in the stanza reading "Confound their politics, Frustrate their knavish tricks," so that the revised version reads beautifully as follows:

O Lord our God arise,
Scatter his enemies,
Make wars to cease.
Keep us from plague and dearth,
Turn Thou our woes to mirth,
And over all the earth
Let there be peace.

Certainly this is unexceptionable, but we think the Dean has not gone far enough, and to remedy his omissions we venture to suggest the following additional lines, which we respectfully sub-



TRAPPERS GET BUSY BIG MONEY IN FURS

Over ten million dollars will be paid to trappers of fur bearing animals during the coming winter. Any man or boy living in the country can add a goodly sum to his earnings by trapping during spare moments. We furnish ABSOLUTELY FREE a complete Trapper's Guide which tells you the size of trap and kind of bait to use for the different animals, how to remove the skins and prepare them for market. We also furnish the best traps and baits at lowest prices. We receive more furs direct from trapping grounds than any other house in the world, therefore can pay the highest prices for them. Our price lists, shipping tags, etc., are also FREE for the asking. If you are a trapper or want to become one, write to us today. We will help you.

F. C. TAYLOR & CO.
GREATEST FUR HOUSE IN THE WORLD
365 Fur Exchange Building, St. Louis, Mo.

FREE Send 25 cents for 12 stretching patterns 4 sets (3 sizes each) Muskrat, Skunk, Raccoon and Mink. If mention this paper will include "free" 6 trapper picture postals in 15 colors.

BAIT Send 25 cents for trial size (3 oz.) "Betterbait" the best bait for land animals. We pay the highest prices for Raw Furs. Write today. Herman Reel Co., Milwaukee, Wis., U. S. A.

FURS

mit to the distinguished consideration of His Majesty:

Please cork up Bernard Shaw,
Keep us from saying "Aw!"
When we converse.
Give English clothes some shape;
Make **Punch** a funny pape;
Show us how to escape
A. Austin's verse.

In any future pinch
Renew our ancient cinch
On Yankee cash.
May Uncle Sammy's girls
With their stocks, bonds, and pearls
Still help our dukes and earls
To cut a dash.

Other stanzas *ad lib.* suggest themselves, covering the present plight of the House of Lords, the dangers of Canadian reciprocity with the United States, and other prayerful considerations affecting the current needs of the Empire, but we prefer to hold them over for our special seventy-two page issue devoted to the question of the annexation of the British Empire to the American Republic.—Harper's Weekly.

MAIL-ORDER BUSINESS COMPARATIVELY SMALL

The wide discussion of Mail Order methods, brought about recently by a big manufacturer's anti-mail order campaign, has brought up the question "What per cent of the goods sold in this country are sold by mail?"

Statistics show that about 95% are sold by retail dealers and 5% by mail-order concerns. In other words, for every dollar's worth of goods the mail order houses of this country sell, the local dealers sell nineteen dollars' worth.

This seems to prove that the public in general have found it to their advantage to buy goods from retail dealers and not risk the disappointments, delays, troubles and inconveniences that attend the mail-order buying.

Nevertheless, mail-order concerns have caused many manufacturers a great deal of trouble. It is not that they themselves do so much business, but that, by misrepresentation, they are destroying public confidence. People have been misled so often by exaggerative mail-order advertisements and catalogs that they are getting so they discount about everything they read. This hurts honest manufacturers and honest dealers who adhere strictly to the truth in advertising and selling their wares. We cordially commend the manufacturers of "Garland" Stoves and Ranges in their attitude of telling the public of the misrepresentations indulged in by many mail-order concerns.

PREPARE TO GROW ALFALFA

W. R. Porter, Supt. Dem. Farms

Here and there all over North Dakota on the experimental and demonstration farms, and on the farms of private individuals profitable crops of alfalfa have been produced from year to year. It has now been definitely proved that alfalfa is hardy enough to withstand our winters and that it will yield from one to four tons of hay per acre each season.

Many others have tried alfalfa and failed. What are the principal reasons why alfalfa fails? 1st: Poor seed, which may be deficient in germinating power, or it is from some southern land such as California or Algeria and lacks hardiness. 2nd: Lack of the proper soil inoculation. Alfalfa to succeed must have a certain species of bacteria to form nodules on its roots. If the bacteria are not introduced artificially into the soil alfalfa is very liable to be a failure. 3rd: Improper soil. A soil that is deficient in lime belongs to this class of soils, which sometimes is the cause of alfalfa failure. A soil that is so low that water stands upon it and is congealed into ice in the spring is not adapted to alfalfa and such conditions are always fatal to alfalfa. If the permanent water table is within three feet of the soil surface alfalfa will generally be a failure, as it is a deep rooting plant. 4th: Weeds, the chief cause of alfalfa failure in the first place. The worst weed of this type is foxtail, or pigeon grass. This comes up and grows very rapidly the first summer and chokes out the young alfalfa. 5th: Cutting at the wrong time. Whenever alfalfa is cut before the crowns form it is being injured, if not killed. Alfalfa should never be cut until the next crop is budding or starting from the crown. The third crop, if cut, leaves no winter protection to the crown, consequently, the alfalfa is induced to start too early in the spring and it is then greatly injured by late freezes. Pasturing is a form of cutting that is very injurious to alfalfa, except hog pasturing, and even hogs should not be allowed to pasture it all at closely.

Essentials of Successful Alfalfa Culture

The first essential is the selection of a well drained, sweet rich soil. Alfalfa, tho a soil enricher, revels in the rich soil, a soil that is never under water at any season of the year, a soil that should produce a heavy crop of corn or wheat is the ideal soil for alfalfa, whether sandy, loam, or heavy clay. The subsoil should

be free from layers of hardpan or layers of gravel.

The second essential is the proper preparation of the soil. It should be coated with manure at the rate of ten to fifteen loads per acre. This should be plowed under to a depth of eight or nine inches. The next spring corn should be planted in check rows and the corn should be so well cultivated and hoed that a single weed will not go to seed. If this is done the greatest enemy of young alfalfa, pigeon grass, will be eliminated, as its seeds will not live over a year in a well cultivated soil. After the corn crop is removed, cultivate the soil with the disc, set to run lightly. Under no circumstances plow it, because you would make the soil too loose and you would probably bring up deeply buried weed seeds.

The third essential is good viable seed of a hardy variety such as the Grimm, Turkestan or Montana. This seed, should have been grown in either North or South Dakota or Montana. Seed this seed on the field prepared as described above at the rate of ten pounds per acre without a nurse crop.

Inoculate your field before seeding or at seeding time by applying soil from an old alfalfa field and harrowing the same into the soil immediately, as sunlight is fatal to the bacteria. Or screen the soil and apply by mixing with the alfalfa seed and seeding the whole thru the ordinary drill.

If your land has been properly prepared, weeds will not bother the first year to any extent, the alfalfa will be twenty inches high and in blossom in August. Under no circumstance cut or pasture this first crop, let it go into winter to protect the roots. If the land was not properly prepared and weeds should seriously bother the first year, do not clip them until the buds have begun to form at the crown of the alfalfa plant, then clip as high as possible and yet check the weeds; remember, clipping is very liable to injure the alfalfa more than the weeds.

If you have never grown alfalfa in North Dakota, try a square rod next spring on your best garden soil, inoculate this little spot with soil obtained from the experiment station or from an alfalfa field in your neighborhood in order to have a source of inoculated soil on your own farm. The fall is the time to lay off five acres to seed to alfalfa in 1913. Manure it well this fall, plow it deep, this fall. Grow a weedless crop of corn on it next year, inoculate and seed it properly in 1913, and thru the succeeding years this five acres



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for spot cash. 10 to 50% more money for you to ship Raw Furs and Hides to us than to sell at home. Write for Price List, Market Report, Shipping Tags, and about our **HUNTERS' & TRAPPERS' GUIDE** 2d Edition. \$10.00 Book. 450 pages, leather bound. Best thing on the subject ever written. Illustrating all Fur Animals. All about Trappers' Secrets, Decoys, Traps, Game Laws, How and where to trap, and to become a successful trapper. It's a regular Encyclopedia. Price, \$2. To our customers, \$1.25. Hides tanned into beautiful Robes. Our Magnetic Bait and Decoy attracts animals to traps, \$1.00 per bottle. Ship your Hides and Furs to us and get highest prices. Andersch Bros., Dept. 37 Minneapolis, Minn.

should produce from ten to twenty tons of alfalfa hay which would be the equivalent of twenty to forty tons of timothy in feeding value for all kinds of live stock.

Alfalfa is a peculiar plant and most North Dakota farmers have much to learn about it. Begin with a square rod in your garden next year, study its nature, and its needs, plan to put in five acres in 1913 and plan to put in larger fields in the succeeding years until you have at least 20 per cent of your land in this very valuable soil enriching legume, which is capable of furnishing you the cheapest and most valuable hay of any cultivated plant known to man.

L. R. Waldron, Superintendent of the Dickinson Sub-Station, gives the following instructions for starting alfalfa:

"The ground selected should be well manured, plowed well and planted to corn or potatoes. This corn or potato crop should be kept very clean during the period of growth. I wish to emphasize this point in keeping the land clean. The extra labor in doing this will pay for itself many times over, the following season when the alfalfa is to be grown.

In the early spring of the year following, the corn stubble or potato land should be disced. Later on the soil should be worked occasionally until late in May.

This working of the soil serves two purposes. The main thing is to kill off the young weeds which will germinate during April and May. While cultivation helped a great deal in keeping the previous cultivated crop in a clean condition, yet one invariably finds plenty of weeds coming up the next spring. We find it quite important to keep the new alfalfa crop as free from weeds as possible, as the young alfalfa are not good weed fighters."

COLD WATER FIRST

It is quite a common practice in washing milk utensils to start with hot water. This is not the best method. In boiling milk a skin forms on it. The hot water likewise hardens this onto the sides of the milk vessel, making it hard to remove. The better way is to first rinse the utensil in cold water, and it should be rinsed as soon as it is emptied of milk, or else the milk will dry and then rinsing will not so thoroughly remove it.

WINTER CLOTHES FOR ALFALFA

Alfalfa from northern grown seed is hardy, yet it needs winter protection. In case there was not a good growth left to cover it, to catch snow and to lessen the effect of freezing and thawing, it will be helpful to put on a light covering of straw or manure. Some of this will get into the hay but the important thing is to save the stand of alfalfa.

CORN'S ADVANTAGE

W. C. Palmer

Corn has an advantage over the small grains. Its growing period is during the warmest part of the year. The soil is then warmed up. This result in more plant food being made available. The days are then the longest and the sun shines the warmest. All these things are needed by a plant to make growth. From this it becomes plain why corn should produce more food on an acre of land than a crop that does not take advantage of the whole growing season.

Corn has another advantage and that is that its nature of growth is such that it can be cultivated. Many may think that this is a disadvantage. The cultivation kills weeds and keeps the moisture from escaping. While corn uses as much moisture as a grain crop, the cultivation given it reduces the amount of moisture that evaporates from the soil—in this way making the corn crop a moisture saver.

The corn crop has the advantage of season of growth, enabling it to produce more per acre than the grain crops, and the advantage of lending itself to being cultivated, which saves moisture and kills weeds, making it both a good producer and a crop to prepare the land for other crops.

THE EXTRA DOLLAR

J. H. Worst

It requires approximately seven dollars per acre to grow a crop. This includes interest on the investment, cost of seed, wear and tear on farm machinery, labor, etc. By adding one dollar's worth of labor to each acre, there is little question but that the average profits would be doubled. In other words, as much profit should be realized from the one additional dollar's worth of labor as is now realized from the seven dollars' worth of unavoidable labor and investment. Consequently if farmers would devote one-third of their land to growing corn and alfalfa, neither of which interferes with the time and labor employed in farming wheat, and put one-third more labor, thus made available on only two-thirds as many acres of wheat, they would grow more wheat than where they spread their energies over one-third larger acreage. The corn and alfalfa fed to livestock would insure them a large additional income, and one that is not often adversely influenced by climatic conditions, while the fertility deposited upon the farm resulting from freeing the corn and alfalfa to livestock would vastly improve the productiveness of the soil.

NOTICE TO UNEMPLOYED—Any one desiring profitable employment at this season, either for full or part time work, should at once address A. B. KUHLMAN whose advertisements can be found in this paper.

MERCHANT AND FARMING

Prof. W. C. Palmer

Why is the merchant interested in farming and better farming? The volume of the merchant's business is measured by the products of the farm. The larger the crop, the more the farmer has to sell and the more he will buy. The merchant who buys from the farmer and sells to the farmer will have the big business in the good crop year. The merchant who does not deal with farmers, deals with those who manufacture for the farmers, or who are engaged in transporting goods to or from the farm, or they may be making things for those who manufacture or transport goods to or from the farm. At the last analysis it is hard to find any one whose business is not measured by the products of the farm.

In a poor crop year the merchant has a hard time, traveling men are taken off the road, railroads reduce the number of their laborers, banks do little business, and all live in hopes of a good crop next year.

Bankers and Farming

Why are bankers interested in farming? The banker's business is measured by the products of the farm. The banker deals in money and credits, both of these are the

CASH for FURS!



You get the highest prices and the quickest returns when you ship your furs to Funsten. We receive and sell more furs direct from trapping sections than any house in the world. The biggest American and foreign buyers are represented at our regular sales. The fierce competition among buyers enables us to get higher prices than anyone else. That's why we can send you the most money for your furs, and send it quicker. Trappers' outfits furnished at cost.

Big Money in Trapping

While work is slack, do some trapping. It pays big. Use Funsten Animal Baits. \$1.00 per can. Guaranteed to increase your catch, or your money refunded. **Traps furnished at Factory Prices** Write today for Catalog E, New Trapper's Guide, Game Laws, Fur Market Reports and Shipping Tags. **ALL SENT FREE.** (21)
Funsten Bros. & Co., 214 Elm St., St. Louis, Mo.

Why Rent a Farm

and be compelled to pay to your landlord most of your hard-earned profits? Own your own farm. Secure a Free Homestead in Manitoba, Saskatchewan or Alberta, or purchase land in one of these districts and bank a profit from \$10.00 to \$12.00 an acre every year.

Land purchased three years ago at \$10.00 an acre has recently changed hands at \$25.00 an acre. The crops grown on these lands warrant the advance. You can

Become Rich

by cattle raising, dairying, mixed farming and grain growing in the Provinces of Manitoba, Saskatchewan and Alberta in Western Canada.

Free homestead and pre-emption areas, as well as land held by railway and land companies, will provide homes for millions.

Adaptable soil, healthful climate, splendid schools and churches and good railways.

For settlers' rates, descriptive literature "Last Best West," how to reach the country and other particulars, write to Sup't of Immigration, Ottawa, Canada, or to the Canadian Gov't Agent.

CHAS. PILLING

Clifford Block Grand Forks, N. D.



greatest when the products of the farm are the largest. Buying and selling is then at its greatest activity. The number of dollars circulating at such times is large and credit being good the same dollar in actual money may do service ten times thru checks and notes without once changing hands. Therefore, it is vastly to the banker's interest that the products of the farm be good. It increases the two commodities in which the bank deals and allows the bank the use of them to the best advantage.

GOOD PRICES FOR PELTS

There is said to be a good demand for furs of all kinds this year, especially in Milwaukee, where the well known house of Herman Reel on West Water Street is paying the very best prices.

Herman Reel is especially well known for his "Better Bait" a preparation which never fails to draw coons, minks, skunks, etc., to the trap. He put this on the market for only 85 cents for a 3-ounce box or \$1 for a 16-ounce box. Trappers say that it's got anything in the world beaten for drawing the game. Animals seem to smell it for miles, and go after it. See his advertisement elsewhere.

CANADA AT THE CHICAGO LAND SHOW

Will Make a Magnificent Exhibit of Grains, Grasses, Vegetables & Fruit

A carload of grain in straw, grasses and other of the products of Western Canada arrived at Chicago the other day, and is now installed in the Coliseum, where the United States Land & Irrigation Exposition is under way. Those who are interested in the "Back to the Land Movement" will find in the Canadian exhibit one of the best displays of the agricultural products of Western Canada that has ever been made. There are representative men there, who will be pleased to give the fullest information regarding the country.

The crop conditions thruout Western Canada the past year have been generally good; and some wonderful crop yields of wheat, oats and barley are recorded. The Canadian Government, under whose auspices the exhibit spoken of is being made, is preparing reports on crops in the different Western Canada districts, and while these will not be ready for distribution at the land show commencing on the 18th of November and closing on Dec. 8th application made to the Canadian Government agent nearest you will bring them to you as soon as they are published.

GREAT RAGWEED. KINGHEAD

L. R. Waldron, Supt. Dickinson Substation

This plant is an annual and attains a height of six or even eight feet. Its leaves

are large and deeply cut. It is best known on account of its "seeds" or achenes. These are light in weight, yellowish or brownish, one-quarter inch long and have an encircling row of projections whence the name "Kinghead." These seeds are so difficult to remove from wheat that their presence in any quantity causes the grade to be reduced. The writer has seen it so abundant in wheat that probably 30 per cent of the threshed grain was composed of kinghead. It seems to infest crops more particularly in low lands. The plants should be pulled the latter part of June or early in July before the seeds have formed.

THE SCHOOLHOUSE ON THE HILL

Zina Lloyd Leach

Oh! yes, I well remember
The schoolhouse on the hill,
The sandbanks all around it,
The little sparkling rill
That leaped adown the hillside
And o'er the shining sand,
Where oft we gayly wandered
Together, hand-in-hand.

Barefooted lads and lassies,
Bright, happy children we,
Who laughed and played together,
Appear in reverie.
One boyish face arises
Out from among the rest,
And I view the cherished schoolmate
I used to love the best.

His bright, blue eyes are sparkling,
His cheeks are all aglow,
The same dear, merry, playmate
As in the long ago,
When he, a boy of seven,
And I, a girl of five,
Played in the sand together—
The happiest pair alive.

We builded mighty mountains
And castles tall and grand
And minarets unnumbered
Within the shining sand.
The mountains that we builded,
The castles—where are they?
Mountains, castles, minarets
Have crumbled to decay.

Now, in their moss-grown ruins
I meet him once again,
And all is joy and gladness,
No sorrow, care, nor pain,
For hand-in-hand together
We climb again the hill,
And skip adown the hillside
And by the crystal rill.

But, hark! the bell is ringing.
Ah! is it all a dream?
Have my childhood days returned
With all their golden gleam?

We hasten to the schoolhouse,
I grasp my book—but, lo!
The schoolhouse now has vanished
With the joys of long ago.

Only the mental pictures
That I have stored away
Are left to tell the story
Of childhood's happy day.
Tho other scenes surround me
My soul in memory will
Turn to my childhood's idol—
The schoolhouse on the hill.

THE WORK OF THE PURE SEED LABORATORY

By H. L. Bolley, N. D. A. C.

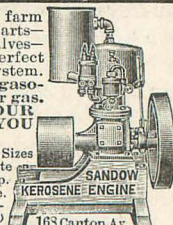
The farming lands of the state are not producing nearly as large returns as they should. One feature which accounts for the low returns is the low quality of seed grains used for sowing purposes by the farmers generally. We would like to make this office useful to the state by aiding in developing the pure or pedigreed seed idea.

We hope to be able to put those who wish to purchase good seed for sowing purposes in touch with those parties who have it for sale, and especially with those who are attempting to grow good grades of pure bred types. If you have any seed for sale or wish to purchase good seed, write us, telling your needs or what you have.

On account of the peculiar root-diseases which attack flax and because these are distributed in the seed, making it difficult to grow this crop unless special attention is given to seed selection, we particularly wish to emphasize that it is absolutely

WANTED—Canvassing Agents at once for the sale of "Compendium of Everyday Wants," the book of general necessity, price \$1.50; also for "The Devil's Bride," a wonderful religious allegory, price \$1.00. Either outfit sent postpaid for 10 cents. 50% commission to agents. Big sellers, Address A. B. KUHLMAN, Publisher, 136 West Lake St., Chicago, Ill.

Sandow \$37⁵⁰
2½ H. P. Stationary Engine—Complete



Gives ample power for all farm uses. Only three moving parts—no cams, no gears, no valves—can't get out of order. Perfect governor—ideal cooling system. Uses kerosene (coal oil), gasoline, alcohol, distillate or gas. Sold on 15 days' trial. **YOUR MONEY BACK IF YOU ARE NOT SATISFIED.** 5-year ironclad guarantee. Sizes 2½ to 20 H. P., at proportionate prices, in stock, ready to ship. Postal brings full particulars free. Write for proposition on first engine in your locality. (116) 163 Canton Ave. Detroit Motor Car Supply Co. Detroit, Mich.

ALFALFA LAND **26,000 ACRES**
of the finest Alfalfa Land on earth. Located in McHenry County, N. Dakota. Sub-irrigated. Pure water. Good railroads. Splendid markets. Any size tracts. Only \$25.00 an acre. Easy terms. **ALFALFA VALLEY LAND CO.,** 632 Pioneer Press Building, Saint Paul, Minnesota.

necessary that the farmers of your locality obtain or retain the very best, brightest-colored flax seed for sowing purposes, if they wish to make the crop a permanent one on their list of rotations. On account of the late frosts and rains many farmers will not have seed suitable for sowing next spring. An effort should be made to save the bright mature stuff. Keep it at home for seed. Good seed will have high value.

Send us samples of seed which you think to purchase. Our reports may aid you to make an early selection of the very best seed for your neighborhood. This laboratory makes seed analyses free of charge and can help you select your stock of sowing seed.

We intend to keep you in touch with the different points of value that we may learn from time to time. At present we have letters from a number of different growers who have been cooperating with this department in the raising of North Dakota Wilt Resistant Nos. 73, 58 and 22 stating that they would like to dispose of some of it this fall. If you would like to get a small quantity of this seed started in your neighborhood with some good farmers, let us know, and we will put you in touch with the parties having a desire to sell this fall.

This seed has made a very fine record, especially on old land. In many cases where ordinary flax died out from wilt, this flax has thrived and produced a full crop.

Send us samples of any sorts of seeds you may be interested in.

EXHIBIT MODEL APPLE ORCHARD AND POTATO FLOAT

That there is nothing new under the sun, is a statement which will be emphatically refuted at the Fourth National Apple Show, which opens at Spokane, this month. A model irrigated apple orchard, 16 feet long and 8 feet wide, made entirely out of sugar, must be conceded as something really new. That this unique exhibit should be turned out from the Northern Pacific Railway bake-shop entitles it to additional honors for being a "stunt" never previously "pulled off." In the model are about 400 trees, an irrigation ditch, a house, barn, windmill, chickens, pigs, sheep and a train of cars loaded with fruit is being pulled from the orchard by a switch engine. To add a touch of realism, the flat cars in the train are loaded with "lady apples"

This model is a sample of the handiwork of the Northern Pacific bakeries, and was made at the company's bake shop at Seattle under the direction of Mr. Fred Kaul. The same degree of care is manifest in this model as in the model of the North Coast Limited train which recently was exhibited and aroused much comment.

It is planned to take the model from

Spokane to Saint Paul for display in the Northwestern Land Products Show to be held in the Saint Paul Auditorium in December.

For the Jubilee Parade, the festive auxiliary feature of the Spokane Apple Show, the Northern Pacific has constructed a mammoth potato made of paper mache, size 32 feet long, 11 feet high, and 14 feet wide. The potato rests upon a platter, and it in turn is carried upon the chassis of an automobile. The chauffeur is to be ensconced within the potato which is split down the middle, a mammoth spoon projecting above it and steam rising realistically from the interior to let the observer appreciate that he is looking at, not only a great potato, but a hot one, similar to those served on Northern Pacific dining cars. The wheels of the automobile will be made invisible by the use of a sign running entirely around the machine and eight little packaninnies will be impressed into service to walk along the sides and carry the platter on their upraised hands, in true waiter style.

POCKET MONEY FOR FARMERS' BOYS

It is not necessary to go to the far North, or to suffer any hardships or run any risks in order to be a trapper. In fence corners, and hollow logs; along the creeks, in the woods, and around the barnyard any bright boy can easily trap mink, skunk, coon, muskrats, and other animals, whose skins bring him from 50 cents to \$10 each. Farm trappers often make \$1,000 in one winter.

Any boy or young man who wants to make a nice little pot of money this winter should begin now to make his plans. Trapping begins usually about the middle of November and lasts until the end of March.

Funsten Bros. and Co., of St. Louis, Mo., one of the leading fur-buying houses of America, will gladly send full information about traps, baits, book about skinning and stretching to any one who writes them. And they will buy all the skins that are sent them.

North Dakota Farmer: Fifty Cents a year; 3 yrs., \$1.00. Agents wanted.

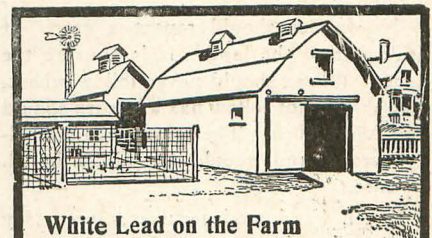
THE TIME TO QUIT

In churning stop when the granules of butter are as large as wheat kernels. Churning until it is all in one lump makes it waxy or greasy, which is one quite common fault with country butter. Run off the buttermilk, wash with cold water and do not work much, as this also makes the butter waxy.

In the winter time have the cream at a temperature of about 58 degrees in churning, and in the summer time about 52 degrees, as it is at this temperature that the globules of butter fat stick together the best, hence the churning can be done quicker.

Are you boosting the North Dakota Farmer? One year, 50 cents; three Years, \$1.00.

AGENTS WANTED—First-class for this and surrounding counties, for the "New Standard 1910 Census Atlas of the World." Agents making \$40.00 to \$60.00 per week. Best of terms. Also Agents for low-priced, easy-selling Juvenile and Holiday Books. Combination Offer, postpaid only 20c. 50% commission to agents. Full particulars free. Address A. B. KUHLMAN, Publisher, 136 West Lake St., Chicago, Ill.



White Lead on the Farm Outbuildings

Every building on your farm that is built of good lumber deserves good paint. Thorough painting means lower repair bills, longer life for the building, and an attractive, prosperous appearance for your whole place.

"Dutch Boy Painter" Pure White Lead

and pure linseed oil makes an ideal paint for farm buildings. It protects the surface perfectly and keeps out the rain and frost. Now is the time to protect your buildings against the fall rains and the winter weather.

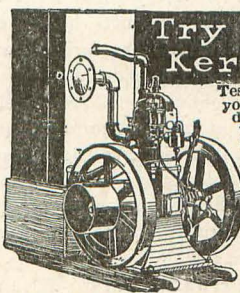
Our Free Painting Helps

We will send you free on request color schemes and miscellaneous painting instructions that you will find of real practical value. Ask for Helps 838



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New York Cleveland Chicago St. Louis Boston Buffalo Cincinnati San Francisco (John T. Lewis & Bros. Co., Philadelphia) (National Lead and Oil Co., Pittsburgh)



Try the Wonderful Columbia Kerosene Engine at our Risk

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Write for Particulars of Our Big Special Offer

We are going to double our output for next year. We can do it easily. It is just a matter of getting engine users to test the Columbia for themselves. So we are making a great special money saving offer on Columbia Kerosene Engines. This offer is liable to be withdrawn at any time, so write today for full particulars, for it is a money saver you would hate to miss. Free Book No. 83, full of engine facts you need to know, sent free.

Sizes 2 to 16 H.P.

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North Dakota Farmer

Entered as second class matter in the postoffice at
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PROF. W. B. RICHARDS, Livestock.
PROF. C. B. WALDRON, Fruits, Forestry, and Insect Pests.
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Address all business correspondence to the Lisbon office.

Vol. 13 NOVEMBER, 1911 No. 5

No farmer should repeat a crop. It isn't fair to the land. It is abusing the land. Wheat should never follow wheat, flax should not follow flax and corn should not follow corn. The principle is radically wrong and should be discontinued. Rotate.

A bill was introduced last winter, "by request," making it a misdemeanor to repeat a crop. Of course, the bill never received consideration. It was considered a joke. Our statesmen were too busy regulating goose shooting, headlights on locomotives, and speed of automobiles. However, if the aforesaid "by request" bill had been enacted into a law and obeyed, it would have been worth, at a low figure, \$15,000,000 a year to the state.

It is as reasonable to prevent abuse of land as abuse of livestock and worth infinitely more to posterity. When will our statesmen rise to things of real and lasting benefit to the state?

The state of Oregon is alive to the work of agricultural improvement. Oregon recognizes the fact that the prosperity of the state depends upon her agricultural interests and makes the necessary provision for their improvement to the utmost.

For the present biennial period, \$621,500 was appropriated. This includes \$127,500 for buildings; \$300,000 for general maintenance; and the remainder is for special investigations, college extension work, etc. It is a safe bid that the state of Oregon will receive tremendous cash returns for this outlay of money. If North Dakota would enjoy a similar awakening, the annual production of wealth could easily be doubled.

"This great husbandry class—at once capitalists and laborers—and standing midway between organized capital and organized labor and affiliated with both, and benefiting and being benefited by both when they are at peace but injured and molested when they are at war, is in logical position to act as umpire to settle their differences and settle them right. This fact alone places agriculture in a position of eminent influence as well as usefulness and the sooner farmers come into their own, politically as well as economically, the better for the entire country."—(President Worst, in address at Helena, Mont.)

"Improvement must come from within." This saying is as true of agriculture as of health, government or business. It is all right to talk about "uplifting country life," but the real thing is for country people to begin the work of lifting themselves up instead of waiting to be lifted up. And no one will question the possibilities in store when this uplifting business is started in dead earnest.

Farmers as a class have not begun to realize their opportunity for making country life the most desirable. The chief argument urged against the necessary improvements to make the country what it should be is: "We can't afford to spend the necessary money." There is but one answer. You can't afford **not** to do it."

THE FARMERS ARE DUPED

E. F. Ladd, Pure Food Commissionet

There is first one scheme and then another to defraud the people, and the farmers are no exception to the general rule.

First, it is the lightning-rod agent who dupes the farmer, the gold-brick man, the patent-medicine man, and scores of those schemers who are interested in helping the farmer, but who in reality are anxious to secure the farmer's money. A few years ago the box-car merchants were unloading goods on the farmers, who paid fancy prices for their coffee and received a berry which was large, rank and raw, worth about one-third of the price paid by them; glucose colored and flavored was sold as syrup; and so the thing went on. Now most of these products have been driven from the state. But farmers who will buy from parties outside of the state must take their chances. They receive doped whiskey; in fact, a product which is not whiskey at all, because they do not buy from reputable firms. They receive products which they cannot use and then ask the Food Department to help them recover their money.

Last year there was a concern defrauding the druggists, securing from them notes for \$77.77 which, when signed, were

supposed to be commission contracts, but in reality turned out to be notes; and often, the very day the goods were received, a man would come with a complaint from the court (and here it seems to me that the Court is in some measure to blame) to appear and show cause why judgment should not be had against the druggist for the amount of \$77.77, and often before the goods had ever been delivered. The party frightened, defrauded and duped, would often give a note that was negotiable, for the first note was not negotiable under North Dakota Laws.

Now, there are other concerns who are interested in the welfare of the farmer; they want to treat his stock for five years; buy his goods for him; sell his produce on commission; in fact, they will do anything for the farmer if he only has the money and they are sure they can get a portion of it. What farmer needs \$107.00 worth of medicine for his stock in five years. It's ridiculous. At Medora recently, according to the Courier-News, there appeared a party to induce a farmer to take advantage of an opportunity of evading the Trusts, apparently, and, not being familiar with the language, he was induced to sign some papers which were supposed to be an application. This turned out to be a note, and later, according to the paper, Mr. Simon Peter Leslie Young appeared and demanded a new note or the cash for the \$107. The farmer got hold of the fraudulent piece of paper and tore it up, and then Simon Peter proceeded to sue the farmer, but the State's Attorney advised that the case be dismissed, because he didn't think that any jury could be convinced that the destruction had been done with malice. If more of our courts would take this stand, and more of our attorneys, there would be less fraud against the farmers. It is estimated that this same concern holds notes for \$50,000 against farmers in Stark County. Quite a nice profit for somebody. Simon Peter has been connected, at least in name, with those who were previously defrauding the farmers as box-car merchants.

How long will the farmers continue to be taken in by this class of men and be defrauded of their hard earned dollars? The writer has repeatedly warned the people of our state against this class of fake schemes.

Special Christmas Offer

N. D. Farmer 2 yrs. - - \$1.00
N. D. Cook Book - - - .50
N. D. School Law - - - .30

Send us only **one dollar** and we will send you the North Dakota Farmer two years or to yourself and another party one year each, and will mail to one address or to separate addresses the North Dakota School Law and the North Dakota Cook Book. This offer is not good after January first.

North Dakota Farmer, Lisbon, N. D.

Pure Food Advertisers

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ASK YOUR GROCER FOR THEM.

"BUY"

"EAT"

HOME BRAND

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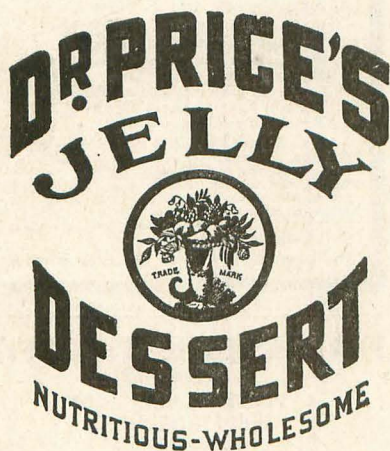
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The Purest of Pure Food Products

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FOOD PRODUCTS

A GUARANTY OF PURITY. A WELCOME GUEST at every table where the HOUSEWIFE demands the BEST. THE MONARCH LABEL insures QUALITY in Coffee, Catsup, Pickles, Maple Syrup, Canned Goods or any article bearing the MONARCH BRAND of REID MURDOCH & CO. CHICAGO.

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CEREKOTA

Self-Rising

Pancake Flour

Is a Scientific Preparation of Healthful Appetizing Ingredients
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GUARANTEED Pure and Wholesome

Ask Your Grocer for a Trial Package

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Lisbon,

North Dakota

Livestock Department

FARM AND STOCK NOTES

N. J. Shepard

It is poor economy to expose young stock to cold and storms.

No winter care can compensate or retrieve the loss of bad summer care.

The best animals are nearly always the offspring of mature parents on both sides.

The man who manages the work of a good farm must have time to do it.

One advantage of salting butter with brine is the certainty of uniform lasting in different churnings.

So far as can be done it is best to fatten and market the hogs before the severest stormy weather sets in.

The feeding value of any food is based chiefly on the amount of albuminoids or nitrogenous matter it contains.

While it is best to allow growing colts to run out every day that the weather will permit, they should be sheltered from storms.

One advantage with sheep is that usually they can be allowed to run out later in the fall and can be turned out earlier in the spring than any other class of stock.

Having the feed under shelter keeps it in a much better condition and avoids much loss. On this account it is nearly always best to feed out what is left out of doors first.

No matter what kind of stock is being fed it pays to have convenient feeding places, tight floors for the hogs and convenient racks or mangers and troughs for the other stock.

Dry bedding not only adds much to the comfort of the stock but increases the supply of manure. But it is not good economy to use so much bedding as to increase the bulk of the manure too much.

Manure is never richer in plant food than when it is first made and there is less loss if applied to the land at once. In the garden and truck patch the manure should be well rotted but with field crops the sooner it is hauled out and scattered the better.

The hog will adapt himself to circumstances better than any other farm animal but there is a line beyond which careless treatment cannot go without injury to the animal and loss to the farmer.

The actual nutritive value of an article of food is of very little consequence unless we combine it with different other articles in such proportion as will fully supply all the various wants of the animal's system.

The young and growing sow, in order to reach perfect development requires all

the elements of her circulation, the product of her digestion, to supply the waste from action, produce animal heat and build up the body to a standard size of adulthood. If the additional tax of supplying the elements of growth and development to a litter of pigs within the body be imposed either an increased amount of food must be consumed and assimilated or the animals must necessarily grow and develop less rapidly and at the age of maturity be undersized, and not the animals they otherwise might have been.

EXHIBITED FOR THE FIRST TIME

Twelve yearling sheep, bred and owned by the Department of Agriculture, will be exhibited at the International Live Stock Exposition, to be held at Chicago, December 2-9, and at the National Mid-Winter Show in connection with the National Wool Growers' Association convention at Omaha, December 13-16. This will be the first opportunity sheepmen have had to observe the progress of the experiment in breeding range sheep started by the Department in 1906, and still in progress at Laramie, Wyoming. The foundation stock experimented with was partly Delaine but largely Rambouillet. The aim has been to develop a range sheep of good size—at least 150 pounds at maturity, shearing a heavy fleece of combing wool and with enough constitution to thrive under range conditions.

SWAMP-FEVER Prof. W. C. Palmer

Swamp-fever is one of the worst horse diseases. So little has been known of the disease that it has seemed treacherous, often striking where least expected. Doctors Van Es, Harris and Schalk of the Veterinary Department of the North Dakota Experiment Station have carried on an extensive investigation into the nature of swamp-fever. They have embodied their results in bulletin 94. They have determined several of the factors in the disease which are given in the summary as follows:

1 Swamp-fever is a disease of infection, transmissible by subcutaneous and intravenous injection and by ingestion thru the alimentary canal.

2. The virus producing the disease is contained in the blood and urine of affected animals, but it is absent from the faeces.

3. The virus has thus far been demon-

strated only in an ultramicroscopic form.

4. The virus is resistant to the severe freezing weather of our more northern climates.

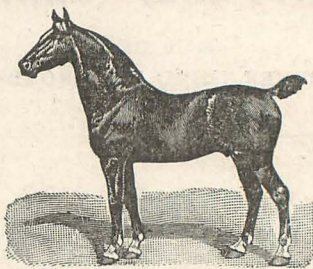
5. While not denying the possible transmission of the disease of healthy animals by means of insects and parasites, animals contract the disease naturally by the ingestion of food and water, contaminated by the urine of an infected horse.

6. The disease is essentially a septicemia, anatomically marked by subserous and sub-endocardial hemorrhages in the more acute forms, by occasional involvement of lymphnodes and spleen, by degenerative changes in the parenchyma of heart, liver, and kidneys, and probably also by certain alterations in the bone-marrow of the long bones of the limbs.

7. The chief and most constant manifestation of the disease are fever and albuminuria. The former is remittent or intermittent, not uncommonly at more or less regular intervals, while the latter is

Warranted to Give Satisfaction.

Gombault's Caustic Balsam



Has Imitators But No Competitors.

A Safe, Speedy and Positive Cure for
Curb, Splint, Sweeny, Capped Hock,
Strained Tendons, Founder, Wind
Fuffs, and all lameness from Spavin,
Kneebone and other bony tumors.
Cures all skin diseases or Parasites,
Thrush, Diphtheria. Removes all
Bunches from Horses or Cattle.

**As a Human Remedy for Rheumatism,
Sprains, Sore Throat, etc., it is invaluable.**
Every bottle of Caustic Balsam sold is
warranted to give satisfaction. Price \$1.50
per bottle. Sold by druggists, or sent by ex-
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its use. Send for descriptive circulars,
testimonials, etc. Address

The Lawrence-Williams Co., Cleveland, O.

FORESTER H. SMITH

Breeder of
**POLAND CHINA PIGS
SHROPSHIRE SHEEP
SEED GRAINS**

I have a bunch of sheep and hogs which can not be equaled in North Dakota. With twenty years experience and the greatest care in selection and breeding I offer for sale this fall rams from imported stock and a man would be proud to have at the head of his flock. Also a limited number of Boars. Write me for prices.

**FORESTER H. SMITH,
Amenia, N. D.**

transitory and frequently synchronous with the febrile excretions.

8. Many cases of swamp-fever terminate without a marked reduction in the red blood cells, a fact denying the popular conception of "swamp-fever" being primarily an anemia.

9. The blood of an animal may remain virulent for as long as thirty-five months after the initial infection, without the infected horse manifesting any clinical evidence of the fact.

10. Such non-clinical infection carriers probably play an important part in the establishment of more or less permanent centers of infection.

11. Both trypan-blue and atozyl are worthless in the treatment of the disease.

12. In the light of our present knowledge we have to depend upon such prophylactic measures as the instruction of diseased animals, segregation of suspects, care in introducing new horses into the stable, the safe-guarding of food and water supply from urine contamination, pasture drainage and stable disinfection.

The bulletin also reviews the observations and investigations that have been made by others, giving 83 references, making it a complete history of swamp-fever up to date. Several plates are included, some of which are colored.

These investigations are the most extensive and thorough that have been made on this baffling disease. Knowing that the virus is contained only in the blood and urine and that the blood of a horse can remain virulent for thirty-five months after infection without any external evidence of being able to transmit the disease is a big step.

QUALITY AND CONFORMATION OF DRAFT HORSES

Compiled from Wisconsin Station.
Station Circular 17

The typical, ideal draft horse, according to A. S. Alexander, of the Wisconsin Experiment Station, stands over 16 hands (5 feet 4 inches) and under 18 hands high, and weighs 1,600 pounds or more in ordinary flesh.

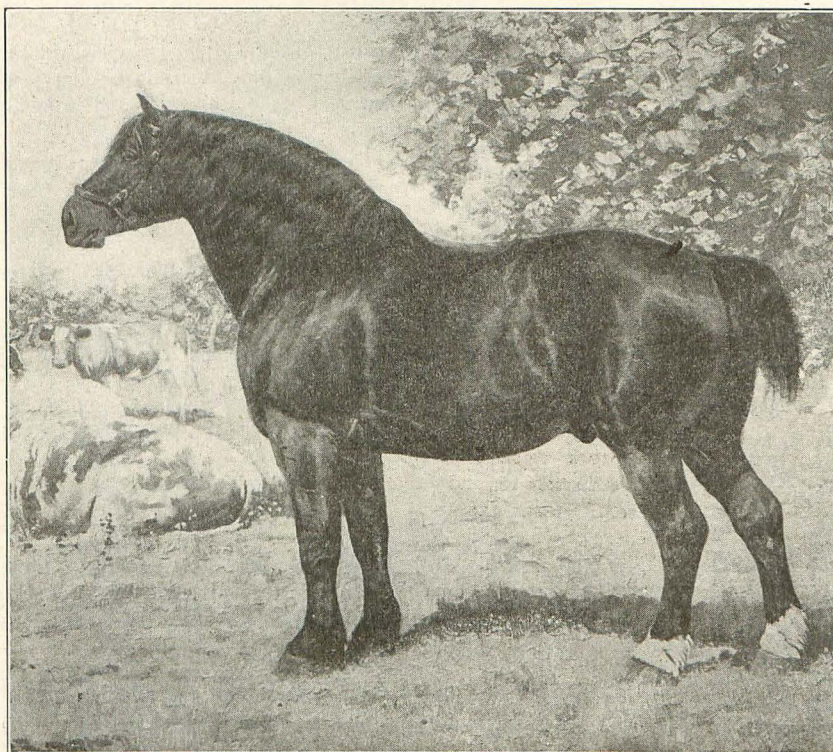
The form should be broad, deep, massive, evenly proportioned, and symmetrical, the entire make-up suggesting great strength and weight. The body should be massive, blocky, and compact, and squarely set on short, broad, clean, sturdy legs showing fine skin, large joints, and prominent tendons.

The head should be large, proportionate in size to the body, well formed, clean, and free from coarseness and irregularities. The forehead should be broad, full, and not dished or too prominent. The profile of the face should not be too straight or of "Roman-nose" form. There should be good width and fullness between the eyes, indicating power and intelligence. The eyes should be bright,

clear, mild, full, sound, and of the same color. The lids should be smooth, well-arched, and free from angularities and wrinkles. The ears should be of medium size, well placed, alert, normally active, and free from coarseness. The nostrils should be large and flexible; the lips thin, even, and firm, and all of the parts neat and clean cut. The skin and hair of the muzzle should be of good quality. There should be a wide space between the lower jaws free from meatiness, abscesses, or tumors. The neck should be of a size proportionate to the rest of the body, well-arched, evenly muscled, with large wind-

sound, smooth, and symmetrical in shape.

The chest, inclosing the heart and lungs, should be roomy in every respect. "An ample, wide, deep chest denotes vigor, power, strong constitution, and easy keeping qualities." The ribs form the "barrel" and should be deep, well sprung, and carried low at the flanks and close to the hips. The back, extending from the rear of the withers to the last rib, should be broad, straight, and muscular. In general appearance it should denote great strength and compactness. The loins should be short, wide, deep, and strong. The underline should run back



pipe and smooth insertion into the shoulder. It should not curve downward (ewe neck) or be broken in crest.

The shoulder should be moderately sloping, smooth, and extending well back.

The arm, which extends from the point of the shoulder to the elbow, should be short, heavily muscled, and well thrown back. The forearm, extending from the elbow to the knee, should be long, flat, wide, heavily muscled, and free from coarseness. The knees should be straight, wide, deep, strongly formed, and smooth. The cannons, extending from the knees to the fetlocks, and composed chiefly of bones and tendons, should be short, strong, clean, and wide, with prominent and smooth tendons. The fetlocks should be wide, straight, strong, and free from puffs, callouses, or interfering sores. The pasterns, extending from the fetlocks to the hoof heads, should be moderately sloping, strong, and clean.

The hoofs should be ample in size,

full and low from the floor (sternum) of the chest. "If the underline slopes sharply upwards to the stifle the abdomen has a cut-up appearance. This indicates lack of roominess and denotes poor keeping qualities."

The upper part of the hind-quarter should show great development of wide, thick, smooth muscle without angularities and coarseness. The croup, the part of the hind quarter from top of the hip to the insertion of the tail, should show comparative levelness, ample muscle, and great strength.

The thighs from the hips down to the stifles should be strong, muscular, wide, and long.

SALESMAN QUICK for circus Liniment and Remedies. Grand Opportunity for street and auction man. \$150 to \$100, per day. Particulars free. Address CIRCUS LINIMENT COMPANY, Chicago.

North Dakota Farmer: Fifty Cents a year; 3 yrs., \$1.00. Agents wanted.

CREAMERY WANTED

There is urgent need for a creamery in the Lower Yellowstone Valley in Montana.

On the west bank of the Yellowstone river between the Great Northern and Northern Pacific railroads, the Government has practically completed an irrigation system to cover 66,000 acres of exceedingly fertile land. About two-thirds of the acreage under the Lower Yellowstone project is in Montana, while the remainder of the lands lie in North Dakota. It consists of a strip of land 65 miles long and 5 miles wide in its widest part, and has an elevation of about 1,900 feet above sea level.

The climate is typical of the western part of the Great Plains region, being semi-arid, with an average rainfall of 15 inches. This rainfall is sufficient to insure good crops of the small grains and vegetables grown in this region. Properly irrigated farms during the present season have produced from 85 to 70 bushels of wheat per acre, from 85 to 122 bushels of oats, and from 43 to 47 bushels of barley. Under the dry farming methods in favorable seasons wheat yields 25 and oats 40 per acre.

The project is located in the midst of one of the best and largest grazing areas in the United States. Stock raising has been carried on in this district for more than a quarter of a century, and the assurance of a good forage crop for winter feed will make this industry a very profitable one. Alfalfa, the great forage crop of the West, is especially adapted to the soil and climate of this section. It yields five tons to the acre in three cuttings, and brings from \$5 per ton upward. The winter feeding and fattening of stock for market will always furnish a good market for all the hay that can be grown on the project. The farmers are awakening to the fact, however, that it is more profit-

able to feed a portion of their crop at least right on the farm, as the dairy products do not supply the local demands. The same is true also of hogs and poultry. The advent of the new railroad will enable the farmers to market their wheat and other grains to better advantage.

The building of the Missouri River Railroad, a branch of the Northern Pacific, thru the entire length of the project, has opened various avenues of industries, the most important of which, in the minds of the farmers of the valley, is a creamery. There are six towns within the boundaries of the project, each offering opportunities for various industries, but the need for a creamery dominates all others. In the vicinity of Sidney and Fairview, the most thickly populated district, the success of a creamery properly conducted would be assured.

The market for the output of the creamery is in the State of Montana. Not a pound of butter need be shipped beyond the borders of the state, which is now importing more than \$1,000,000 worth of dairy products annually.

There are still about 30 farms awaiting entrymen, and 1,500 acres of state land for which water is available have not yet been sold. The Statistician of the Reclamation Service at Washington, D. C., will be glad to answer inquiries concerning opportunities in this section.



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1 to 10-gal capacity. Makes good butter from milk or cream, easy in from 1 to 5 minutes. Write to-day sure, get one FREE.

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REGISTERED ANGUS CATTLE. Must be sold.

WOLF AND FOX HOUNDS that will catch and kill. Fine pups \$5.00 each

PET STOCK OF ALL KINDS. PURE BRED POULTRY, all varieties.

We can please you both in Quality and Price

L. H. WHITE, Prop.

COGSWELL, N. D.

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Percheron, Belgian and Shire horses
J. W. & F. T. PETERSON, Litchfield, Minn.

MEADOW LAWN FARM has for sale prize-winning Young Percheron Stallions, and Shorthorn Bulls bred hornless.

Our large herd contains many of the finest individuals from the east. Prices right with terms to suit purchaser.

Our motto: The best is none too good.

A. H. WHITE, Kramer, N. D.

CATTLE

North Branch Stock Farm. High class Shorthorns. Herd, bull Supreme Judge 177722—pure Scotch, John Donnelly, Grafton, N. D.

FOR SALE**GALLOWAY CATTLE**

J. W. & F. T. PETERSON, Litchfield, Minn

SWINE

POLAND CHINA PIGS, also Shropshire sheep. Seed grain. **GEO. N. SMITH,** Amedia, N. D.

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EGGS FOR HATCHING. Express prepaid \$2 per 15, from pure bred Golden Wyandottes and White Plymouth Rocks (Fishels strain.) Choice stock for sale. Send for Catalog. C. H. McGEE, Oriska, N. D.

MISCELLANEOUS

Envilla Stock Farm. Cogswell N. D. will quote you special prices on Angus Cattle, Shetland Ponies, Duroc Jersey Hogs, Wolf and Fox Hounds, Pure Bred Poultry, Pet Stock. Write them.

FARMS FOR RENT OR SALE ON CROP payments. J. MULHALL, Sioux City, Iowa.

FOR SALE One of the finest and best improved farms in this county, 3 1/2 miles from Bowbells, part cash, worth \$5,000, for \$3,900. H. L. Lyon, Bowbells, N. D.

THE MOUSE RIVER LAND AND LOAN COMPANY AND THE MOHALL STATE BANK

At Mohall, Renville County, North Dakota, have a large list of farm lands for sale, and terms and prices are better than in any other part of North Dakota. They would be glad to have you write them for prices and terms. Our slogan is, "Own your own home in the Mouse River Loop."

FOR SALE: Registered Jerseys. Bull calves and one mature Bull at reasonable prices. W. G. Weeks, Backoo, N. Dak.

RED-POLLED AND GALLOWAYS**Shropshire Bucks**

J. S. BIXBY, - - LISBON, N. D.

WANTED—Young Men to take the Railway Mail Clerk examination called for the Dakotas; salary \$900, work half time, common school education required. Passing means appointment. American Institute, Dept.—68—Dayton, Ohio.

FOR SALE. Creamery in first class condition at a bargain at Crystal, N. D. For further information write to J. S. GESTSON, Sec. CRYSTAL, N. D.

FARMS WANTED

TO FARM OWNERS: Our plan puts you into communication with buyers at low cost; write for particulars.

Co-operative Advertising Company
Fergus Falls, Minn.

UTILIZATION OF FEED BY CATTLE

It is a fact of common knowledge that marked differences exist between individual animals as regards the returns which they yield for the feed consumed. A current statement is that a good feeder has a greater digestive power than a poor one, or that the power of assimilation of the one animal is superior to that of the other, and it has been assumed that the advantage of the better type of animal lay in its ability to produce more flesh or fat from a unit of feed than could the poorer one. It has also been commonly taught, and seems to be generally accepted by animal husbandmen as an established fact, that young growing animals not only make actually larger gains than more mature ones, but likewise more economical gains.

The influence of type and age upon the Utilization of Feed by Cattle has, therefore been investigated by officials of the

nitrogen balance were determined for each animal.

During each of the three winters covered by the investigation, four experiments were made on each animal by means of the respiration calorimeter in order to determine the percentage availability of the energy of the feed consumed. During the first winter, that of 1904-05, the feeding stuffs used differed from those employed during the ordinary feeding. In the succeeding two winters the grain feeds used were the same, only the amount differing.

While the results fail to show any material difference between the physiological processes of food utilization in the two animals, they do show clearly an economic superiority of the purebred over the scrub steer, due, first to his relatively smaller maintenance requirement, and, second, to his ability to consume a larger surplus of feed above the requirement. Both of the facts tend to make the actual

the results of the block test.

The animals were killed on Jan. 4, 1908. The scrub was rated as "common," and the purebred was graded as "prime." The total dressed weight and the weights of the several wholesale cuts show the considerably higher percentage of dressed weight in the case of the purebred which is characteristic of the beef animal, and likewise the predominance of the loin cut over the less valuable cuts of the fore-quarter in the beef animal as compared with the scrub, and the marketable meat of the retail cuts show that the proportion of valuable cuts was notably greater in the purebred.

BACTERIAL CONTAMINATION OF MILK

G. A. Gilbert, Colorado A. C.

The bacteria, seeded so numerous in our market milk, come from widely different sources. It is practically



A Bunch of Purebreds. "And the Purebred was graded 'prime.' "

Department of Agriculture, and the result published in Bureau of Animal Industry Bulletin No. 88.

Two steer calves were selected as the subjects of this investigation, one a purebred animal of one of the wellknown beef breeds; the other a "scrub" of mixed breeding. Exhaustive feeding trials were carried out with these animals, including twenty-four experiments with the respiration calorimeter. Finally the steers were subjected to a slaughter test, whereby the quality of the meat and the relative size of the various cuts were accurately determined. The work is therefore important alike to the practical feeder and the agricultural scientist.

The feeding stuffs used were of the same kind for both animals in all the periods, and the different grains used were mixed thruout in the same proportions for each steer. At intervals during the time the digestibility of the total ration and the

production of human food in the form of meat and fat unit of total feed consumed by the animal notably greater by the purebred animal.

In the case of the purebred animal especially, and to a less degree in that of the scrub, rations containing less available energy and notably less digestible protein than the amounts called for by the current feeding standards for growing cattle, produced entirely satisfactory gains in live weight.

A distinct influence of age upon the maintenance requirement was observed between the ages of 14 and 39 months, the requirements decreasing relatively as the animals matured. The gain in weight of the scrub as compared with that by the purebred steer consisted more largely of protein with its accompanying water and to a smaller extent of fat, and therefore represented a materially smaller storage of feed energy. This was also indicated by

certain that milk as it is secreted by the healthy udder is sterile. However, it is difficult to draw sterile milk from the cow. In the case of a cow suffering from disease, such as tuberculosis or inflammation of the udder, the germs are able to pass directly from the cow into the milk. Bacteria, adhering to the mouth of the milk ducts, can make their way up into the teat for a short distance. Here they find rich food in the few drops of milk that remain, and the warmth of the teat causes their rapid increase.

One of the chief sources of contamination is from the cow herself. The coat of the cow, even kept under good conditions, offers the best of facilities for harboring dust and dirt. All of this filth is laden with bacteria in immense numbers. In the switching of the tail, the movement of the flanks, the rubbing of the skin by the milker, there is a constant

shower of bacteria into the pail.

What is true of the cow is also true of the person of the milker. Clothed in the dust laden garments of daily use he carries innumerable bacteria, many of which are dislodged and fall into the milk. It is not so much the number from this source as it is their liability of being disease producers that is important.

The air is another source of contamination. The movements of men and animals in the stables cause a good deal of dust to rise and settle in the exposed milk. The presence of dust is always accompanied by large numbers of bacteria, especially of the putrefactive and spore-producing kind.

Probably the most prolific source of milk contamination, as far as numbers are concerned, is the milk utensils. As the milk passes from one utensil to another it gathers more and more bacteria. Pails and other utensils are usually washed with hot water and soap. But after ordinary washing there will be left clinging to such utensils many bacteria which are ready to develop as soon as fresh milk is added to furnish proper food and conditions. Undoubtedly most of these bacteria are lactic acid producers and, altho harmless, will cause an early souring of the milk.

These various contaminating factors can be largely lessened or completely eliminated. The most of the bacteria from the fore milk can be thrown out by rejecting the first few streams. Dust in the air can be reduced by exercising care as to the time of feeding and bedding. The number of germs from the animal and the milker can be reduced by cleaning and moistening the udder and the flanks of the animal, by using a pail with a small opening, and by requiring the milker to wash his hands and use clean clothes. The use of steam or scalding water in washing the dairy utensils will entirely exclude the germs from this source.

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To close estate at once I must sacrifice beautiful 26-acre Florida home, 6-room cottage, modern improvements. Barn, outhouses, all necessary live stock, poultry, machinery and equipments. Will yield over \$4000 a year, if properly cared for. Price complete, \$1500. Terms \$50 cash; \$25 quarterly, if desired by responsible party. Possession March 1.

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Genuine Hamilton Take-down Hunting Rifle, 22 cal., long or short. Kills game at 100 yards. Automatic shell extractor. Set of targets. Given for selling 30 of our latest Jewelry Novelties at 10 cents each. Easy selling. We trust you. Send at once. Extra present. THE WHITE CO., Box D, Melrose Highlands, Mass.

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A correspondent-representative wanted in every county. Write for terms.

ST. PAUL UNION STOCKYARDS CO. REPORT FOR OCTOBER, 1911

Receipts and Shipments of Live Stock

		Receipts						
	Railroads.....	Cattle	Calves	Hogs	Sheep	Horses	Total	Cars
C. R. I. & P.....	395	163	1153	207	..	..	33	..
C. G. W.....	1479	218	3760	1497	62	..	120	..
C. M. & St. P.....	8535	1317	12987	84767	162	..	830	..
M. & St. L.....	3787	927	9025	1191	3	..	273	..
C., St. P. M. & O..	5762	1411	16384	4942	244	..	497	..
C. B. & Q.....	368	45	1822	611	1	..	44	..
M. St. P. & S. S. M	13231	2481	9890	4236	2	..	644	..
Gt. Nor.....	35890	4747	13868	92287	134	..	2145	..
Nor. Pac.....	20394	2547	2703	85831	37	..	1152	..
St. P. B. & T.....	..	..	..	..	..	..	..	..
Driven In.....	845	112	617	40	2	..	..	..
Total.....	90686	13968	72209	275609	647	..	5738	..
Increase.....	..	503	..	..	290	..	..	..
Decrease.....	10526	..	18164	37858	..	..	700	..
Jan. 1 to date.....	349966	113221	693852	552258	7273	..	26088	..
Increase.....	..	4593	73404	..	2461	..	..	..
Decrease.....	59111	..	..	175423	..	..	2070	..
Average Wts.....	789	189	215	79	..	..	..	..
		Shipments						
C. R. I. & P.....	5427	74	..	4355	..	..	174	..
C. G. W.....	4120	295	303	29294	22	..	246	..
C. M. & St. P.....	15458	1210	11451	75549	141	..	973	..
M. & St. L.....	2047	97	..	2076	21	..	69	..
C. St. P. M. & O..	9357	308	5538	28048	81	..	503	..
C. B. & Q.....	25160	1510	200	69678	173	..	1267	..
M. St. P. & S. S. M	1765	169	233	9072	94	..	105	..
Gt. Nor.....	1182	43	76	10269	28	..	90	..
Nor. Pac.....	859	121	11	3659	12	..	48	..
St. P. B. & T.....	..	..	..	..	..	..	..	..
Driven Out.....	1478	475	79	590	73	..	..	..
Total.....	66853	4302	17891	232590	645	..	3475	..
Increase.....	..	387	..	..	282	..	..	..
Decrease.....	9810	..	7500	45258	..	..	881	..
Jan. to Date.....	241869	33114	191715	413864	7214	..	11998	..
Increase.....	..	3862	57058	..	2060	..	..	..
Decrease.....	46162	..	..	150061	..	..	2091	..
		Origin of Live Stock Received						
States	Cattle.	Calves	Hogs	Sheep	Horses	Total	Cars	
Minnesota.....	38584	9390	53661	17335	33	2336	..	
Wisconsin.....	4181	1054	9863	4239	6	317	..	

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We are in the market for North Dakota grown TIMOTHY, BROMUS and MILLET of all varieties.

Send us samples of any high grade grass seed grain you have for sale, and we will make bid on same F. O. B. your station. WRITE US TODAY.

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BREEDER OF: Black Percheron and Hambletonian Horses Red Polled Cattle, Poland China Hogs White P. R. Chickens, White Holland Turkeys, White Embden Geese, White Pekin Ducks and White Guinea Fowls

GROWER OF: Minnesota No. 169, Spring Wheat, Swedish Select Oats, White Hulless and Success Beardless Barley, Turkey Red Winter Wheat, N. D. 959 Winter Rye, Northwestern Dent Corn, Early Ohio Potatoes, Timothy and Alfalfa.

Young Stock and Pure Seed, for sale. Write me for particulars.

J. A. ENGLUND, Prop.

Kenmare, North Dakota.

IMPORTANCE OF MINERAL MATTER IN RATIONS

J. B. McNulty, Colorado A. C., Fort Collins

A recent experiment, conducted by the Wisconsin Experiment Station, establishes some interesting and practical principles in regard to the ash content of rations for farm animals. The ash constituents, or the mineral matter in feeding stuffs, is composed of various elements, the most important ones of which are lime, phosphorus and potash. The work and results of the Wisconsin experiment are as follows:

Three lots of pigs were chosen. One lot was fed a well balanced ration in which there was a very small amount of organic phosphorus, about a gram. The second lot was fed a similar ration, with the exception of phosphorus content which was increased to about five grams by the addition of ground rock phosphate, while the third lot was fed a ration in which the phosphorus was supplied from the feeds. This is known as organic phosphorus and is the usual way of including this element in a ration.

The first month of the experiment resulted in a considerable daily gain for the hogs of each lot. After that time, however, the hogs of lot one began to lose in weight, to become inactive, and at the end of three months were so lifeless that they refused to come to their feed unless assisted. Phosphorus was then added to their ration and the hogs were restored to a normal condition.

The important facts to be learned from the above experiment are two; one is that a certain amount of phosphorus (from 3 to 5 grains in the case of a fifty-pound growing hog) is an absolute necessity in a ration for hogs; the second is that the phosphorus of a hog may be secured by including ground rock phosphate with the feeds.

Because of the high ash content of clover and alfalfa, and, in fact, all legumes, and because of the adaptability of these feeds to the digestive apparatus of sheep, cattle and horses, the feeders of these classes of animals should have no particular difficulty in supplying the mineral elements. With the hog feeder, however, the problem is quite different. He must supply his mineral matter from the concentrates, since the digestive organs of the hog are not adapted to the feeding of any considerable amount of roughage. To be sure, pastures of any of the above crops will greatly aid in balancing a ration for hogs, but, since pastures can only be had for a limited portion of each year, the hog feeder must rely on some other source. Rock phosphate can be purchased for about twelve dollars per ton and the fact that hogs can thrive on a ration, the phosphorus of which comes from the above source, is of especial interest to profitable hog feeders.

The rapidity with which a young animal forms the skeleton, forty to fifty per cent of which is mineral matter, is one great reason why those in this stage should have an optimum amount of lime, phosphorus and potash. In the experiments just re-

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S. C. Buff Orpington S. C. Black Orpington

M. Bronze Turkeys, M. Pekins Ducks and Indian Runner Ducks.

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Won all first at Fargo, N. D. State Show, 1906, 1907, 1908, 1909 and 1911. Stock at reasonable prices

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HAUSMANN POULTRY FARM

Breeders of W. Wyandottes and S. C. W. Leghorns
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PURE WHITE WYANDOTTE Eggs for hatching \$1.50 for 15, \$7.00 for 100, \$14.00 for 220.
E. A. Tow, Lisbon, N. Dak.

S. C. W. LEGHORNS

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Box 486, Casselton, N. D.

SILVER LACED WYANDOTTES

Thoroughbred, Wide Open Laced, Big Utility Birds, Bred for Business. Tested Fertile Eggs for Hatching, 15 \$1.50; 30 \$2.75; 45 \$4.00; 100 \$8.00. Satisfaction Guaranteed.

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WHITE AND BUFF WYANDOTTES that always win. Choice stock for sale. EGGS for hatching from pens of well-selected stock, sure to produce winners. Prices reasonable. Satisfaction absolutely guaranteed. Write me your wants.
L. O. CUMMINS, Casselton, North Dakota

FOR SALE. M. B. Turkey Toms, raised from our Diploma Stock, \$5.00 and up; also Eggs from 26 varieties poultry. Catalog free.
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Eggs for sale, \$2 for 15 eggs.

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Box 30, Mankato, Minn.

ST. PAUL UNION STOCKYARDS CO. REPORT FOR OCTOBER, 1911

Iowa.....	49	..	131	..	176	12
Far South.....	166	2	..	..	84	11
So. Dakota.....	6532	902	5658	16572	114	393
No. Dakota.....	19173	1263	2894	34861	106	936
Montana.....	21924	1343	2	200634	128	1723
Far West.....	..	..	..	1666	..	6
Manitoba & N.W.T	..	..	..	..	..	..
Far East.....	..	..	..	..	..	..
Returned.....	77	14	..	302	..	4
Totals.....	90686	13968	72209	275609	647	5738

Disposition of Live Stock

So. St. Paul P'k'rs .	25082	7644	54564	24857	..	..
Cy. & State Butch.	1351	641	2235	1082	..	80
Outside Packers...	4111	..	14982	5670	..	302
Minnesota.....	4691	473	..	23326	171	225
Wisconsin.....	1666	37	..	4805	73	91
Iowa.....	10267	385	35	10656	1	346
Nebraska.....	92	..	..	..	..	2
Kansas & Missouri	91	..	..	..	..	2
So. Dakota.....	241	74	..	2226	..	17
No. Dakota.....	1341	112	76	3519	..	60
Montana & West..	448	..	..	..	..	12
Far South.....	..	..	..	..	..	..
Manitoba & N.W.T.	22	3	..	458	36	5
Mich. & E. Can...	57	..	..	220	74	7
Chicago.....	29996	1995	423	179111	41	1959
Ills (ex Chicago) ..	5871	306	140	850	81	184
Eastern Points....	6491	262	..	365	168	179
Returned.....	77	14	..	302	..	4

lated the hogs of lot one drew the ash elements needed for flesh formation from their own skeletons. Several scientists have proved that a lack of mineral matter in the ration of a milking cow resulted in the robbing of the skeleton to furnish such. The daily yield of milk demands considerable ash, particularly phosphorus and lime. In conclusion it is only necessary to state that early maturity in any class of animals, as well as economic meat or milk production, is impossible to the feeder who ignores the question of ash content in his rations.

GOVERNMENT BUYS MORE MORGAN HORSES

The Bureau of Animal Industry of the United States Department of Agriculture has just purchased in Meade County, Kansas, four additional horses for use in the Government breeding work that is being carried on in Vermont with the object of preserving and improving the Morgan breed. These animals are the seven-year-old Morgan mare Fanny P. (Vol. III, A. M. R.), two yearling fillies by Headlight Morgan (a son of Ethan Allen 2d), and a colt out of Fanny P. by Headlight Morgan. One of the fillies is out of Fanny P.,

Fanny P. is by Julian Morgan, the sire of Roy Morgan, champion Morgan stallion at the principal State fairs of the Central West in 1910. Fanny P.'s dam was by Flying Morrill, and her second dam by a son of Billy Root.

The pedigree of Headlight Morgan is well known to Morgan breeders. The horse was foaled in southwestern Kansas and has a well-deserved reputation in that vicinity as a sire.

These horses are among the descendants of a large consignment of selected animals purchased in Vermont and Illinois in the early nineties by the Morgan Horse Company of Carpentersville, Ill., and sent to southwestern Kansas to take advantage of cheap pasture there. Unfortunately, however, and partly on account of the depression in the horse market several years ago, the venture was not a success, the company disbanding and the horses being scattered over a wide territory. Some of this stock still remains in Kansas and Oklahoma.

The animals bought by the Government will be taken to the Morgan Horse Farm at Middlebury, Vt.

HOUSING DURING WINTER Geo. Hausmann

To be successful there are three things absolutely necessary for the housing of a flock of fowls, in winter. These are comfort, proper feed and exercise. If any of

these are lacking, the flock will be handicapped, and the owner will be disappointed in results obtained. All of these factors are easily supplied, if a flock gets proper consideration from their owner at all.

To be comfortable the fowls must be kept warm, free from lice, and must have fresh air. By warm, it is to be understood, a temperature so the water will not freeze. In some cases this may seem impossible unless where artificial heat is used, which, however, is not advisable. If a poultry house is properly constructed so that it is wind proof, and there are no cracks or holes thru which the cold air can enter, there will be little trouble to keep the fowls warm. Another thing that helps along a whole lot to keep the house warm, is to use some banking on the north side, manure if possible.

Next is to get rid of the vermin. Do all you can, and constantly too, to strive to get rid of them. Where mites and lice are overly thick, it will be well on the first opportune day, to burn sulphur. Chase out your hens in the morning and then burn your sulphur, good and plenty of it too. Towards evening open up your house, to let the fumes out. Then paint thoroly the roosts with liquid lice-killer.

In saying "to feed properly," it would be better to say "to feed with a little bit of horse sense." Do not feed according to everybody's advice. Feed varieties of grain. For green, cut clover, alfalfa, mangles, cabbage or anything in that line. Next, something must be fed to take the place of insects, and nothing can be compared with beef scraps or green bone. Last, add something to help digest, such as oyster shell, bone and grit. Feed with some judgment and results will follow.

Don't overlook the fact that exercise

plays an important part in profitable culture during the winter months. Exercise helps to make rich, red blood, keeps the fowls healthy and vigorous, and makes them productive and profitable. This is where the scratching shed plays its important part. Fowls that can spend the day in scratching are the ones to bring results. When no scratching shed is used, fill the floor of the house with an ample supply of straw, a foot, at least. The whole grain should be fed in the litter.

This is briefly going over things that must be done to house a flock of chickens during winter. A little judgment will be needed, to get results.

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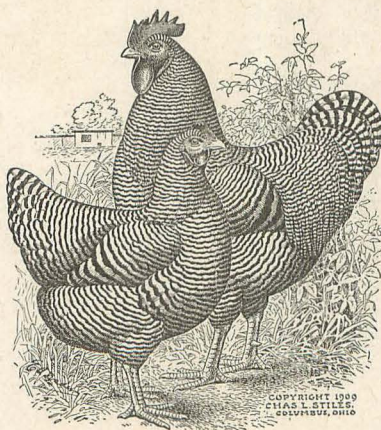
The North Dakota Farmer, Lisbon, N. D.

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THE NORTH DAKOTA FARMER

When Writing Advertisers

Home Department

AIR IN THE HOME

By Dr. Ella S. Webb

Air, water and food are the great essentials of life. A man may go for days without food and for hours without water but deprive him of air for a few minutes and he ceases to live.

The State and the Country alike exercise some supervision of the food and water supply of the people, but the air is "free" to all, and it is left to each one to regulate the quantity and quality of her home. Unfortunately air laden with the foulest and most poisonous substances can be inhaled without immediate knowledge of the conditions, but the effects are seen later in headache, drowsiness and other warning symptoms which in the case of habitually unventilated dwellings results in deficient nutrition, loss of vigor of body and mind and of the power to resist disease.

We reject dirty food for our stomach while using dirty air for our lungs, organs far more delicately constructed than the digestive apparatus and needing careful consideration if we would have the best health and strength.

Go into the large majority of living and sleeping rooms in city or country especially in winter and you will find a reason for the spread of the white plague which is slaying thousands of our young people all over the land.

Fresh air, then, is a law of our well being. The average adult contaminates about five thousand cubic inches of air with every breath, and in ordinary respiration an adult abstracts sixteen cubic feet of oxygen from the atmosphere every twenty-four hours, and adds to it fourteen cubic feet of carbonic acid gas in the same time. Nearly one-third of the excretions of the body are eliminated from the lungs and another large proportion thru the skin.

In the brief time I have at my command, I can only suggest methods of meeting this demand of our nature for fresh air by means of ventilation and out-door life, methods with which you are probably familiar.

At once we are confronted with the obstacle to perfectly ventilating a house. Economic considerations frequently lead householders to save fuel at the expense of health; again drafts from open windows are objectionable; also, many persons accustomed themselves to an overheated room and catch cold if fresh air is admitted while sitting at work. Science and invention are coming to our aid to overcome

the first two objections and the last can and will be overcome by the exercise of will power and the desire to be well. Public opinion is coming to favor open windows in sleeping apartments and the sleeping porch or tent has ceased to be a fad; the arrangements for absolute comfort of body enjoying fresh pure air for

the lungs has been reduced to a science along those lines.

In this very important matter of fresh air as a necessity for physical health it has seemed that familiarity with the subject has bred indifference.

It is of vital importance to realize that we cannot consume too much air, the larger the quantity the greater the amount of life giving oxygen conveyed to all parts of the body, and the larger the lung capacity the better health and strength.

Boost your state farm journal—
The North Dakota Farmer

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This of itself is a strong recommendation of "BALL-BAND" to you.

But stronger yet is the fact that more than eight million people wear "BALL-BAND," and will not be satisfied with anything else.

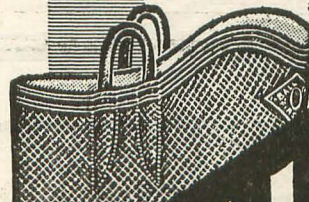
Many of these millions have worn "BALL-BAND" for years. Multitudes are added to this host of buyers every year.

One word explains the continued demand of the wearers for "BALL-BAND"—QUALITY.

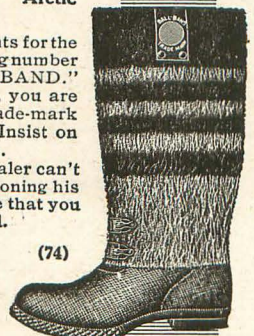
People don't come back a second time for an article that disappoints them. Eight million people are not deceived year



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"Ball-Band" 4-Buckle Arctic



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MISHAWAKA, IND.

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"Ball-Band" Coon Tail Knit Boot

A NEW BULLETIN ON TUBERCULOSIS

Farmers' Bulletin 473, contains an important and most comprehensive statement of facts on bovine tuberculosis. The bulletin deals with the history, nature, symptoms of the disease; how it spreads, how a herd is infected, the tuberculin test, and its prevention and suppression.

"Tuberculosis," the bulletin states, "is a wide-spread disease affecting animals and also man. Human beings and cattle are its chief victims, but there is no kind of animal that will not take it. Hogs and chickens are quite often affected; horses, sheep, and goats being affected but seldom, however.

The disease is contagious. It spreads from cow to cow in a herd until most of them are affected. It is slow in developing and may not become noticeable for months or even years. The tuberculin test, which can not do harm to the healthy cow, reveals the germ in a few hours, and always proves successful when in the hands of an experienced veterinarian."

"The disease is common among hogs," the bulletin goes on, "The public abattoirs report that a serious percentage of hogs inspected is found to be tuberculous. The losses among cattle and hogs are enormous, amounting to millions of dollars annually."

Turning to the infection of human beings with the tuberculosis germ thru cattle, the bulletin says, "Milk is the staple food of infants and young children and is usually taken in the raw state. If this milk is taken from a tuberculous cow it may contain millions of living tubercle germs. Young children fed on such milk often contract the disease, and it is a frequent cause of death among them.

"Meat from tuberculous cattle is not so likely to convey the infection for several reasons. It does not so frequently contain the germs, cooking destroys those that may be present, and, lastly, meat is not consumed by very young children.

As to the spread of the disease, the bulletin says: "Sooner or later the tuberculous cow begins to give off the germs of the disease. The germs escape by the mouth and nose, the bowels, in the milk, and in discharges from the genital organs. When the germs are being given off in any of these ways, the disease is known as open tuberculosis.

The bulletin concludes with: "Dark, dirty, crowded stables are favorable to tuberculosis. Under these conditions the disease spreads rapidly and is only kept out with difficulty.

"Clean, airy, well-lighted stables, on the other hand, are unfavorable to the development of the disease. If brought into such a stable it does not spread so rapidly and is not so difficult to get rid of as in the first case.

"A well-built, sanitary stable need not

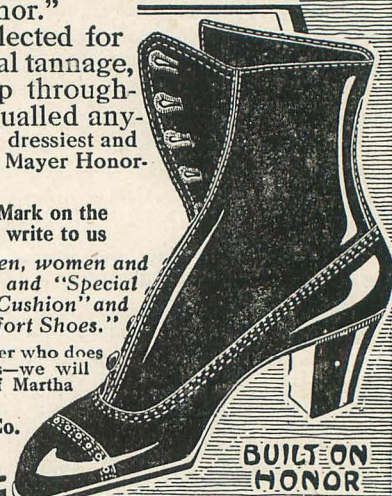
be made of expensive material or of elaborate design, but should have plenty of light, air, and drainage.

"Light is very important. Direct sunlight is a great destroyer of germ life. Tubercle bacilli soon die if exposed to sunlight. It is a disinfectant, always ready to work without cost."

BROTHER--Would like to correspond with all who wish to quit the Tobacco habit.
T. E. Stokes. - - - Mohawk, Florida.

TRI-STATE MEETING FOR WOMEN

Women's meetings will be held at the Tri-State Grain Growers' Convention to be held at Fargo the third week in January. This will be a fine opportunity for the farmer's wife to get a little vacation. Mr. Farmer will come, and should bring his wife. She has worked hard and earned a little vacation. Then again, the



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NORTH DAKOTA FARMER, Lisbon

talks to be given at the women's meetings will be instructive and helpful. She will also want to attend some of the sessions of the regular convention, which is the greatest farmers' meeting in the United States. If all the farmers would bring their wives it would become the greatest farmers' wives meeting in America, if not in the world. While Mr. Farmer at the Tri-State convention is learning the latest on agriculture, his wife can be learning the best that has been worked out in her line of work.

FARM DINNER

By J. H. Shepperd, Dean N. D. A. C.

Eastgate Brothers of Willowbank Farm, Larimore, N. D., served a unique dinner to a crowd of invited guests on Thursday, October 26, 1911.

The dinner consisted entirely of things grown and manufactured on the farm with the exception of coffee, sugar, spices, salt and pepper. The following bill of fare was printed on very attractive menu cards, on the front page of which was attached a sprig of red cedar, from one of the set of trees which Mr. Eastgate had grown from seed:

Menu

Cream of Tomato Soup	
Bread Crisp	
Cucumber, Crabapple, Tomato and	
Muskmelon Pickles, Onions	
Roast Turkey with Dressing	
Fried Chicken	Cold-boiled Ham
English Light Pudding, Brown Gravy	
Mashed Potatoes	Creamed Peas
Creamed Corn	Scalloped Parsnips
Baked Squash	
Cabbage Salad	
Apple Pie	Pumpkin Pie
Currant Jelly	Clover Honey
Cottage Cheese	
[Rye or Whole Wheat Bread	
Butter	
Tea	Coffee
	Milk

On this farm they mill some of their wheat and rye, and in consequence were able to serve both kinds of bread from

their own product. I am told that this is a commercial enterprise with them and that they offer whole wheat flour to the public.

The dinner was a splendid illustration of what can be produced on a North Dakota farm, as it was unusually fine and extensive as the inspection of the above list of dishes will indicate.

After dinner we held a moving farmers' institute and inspected and discussed all of the live stock, crops, and other items of interest about the farm.

This certainly demonstrates that it is not necessary for a North Dakota farmer to spend much money for his living, if he will plan out his farm as these young men have done.

There are a great many items of production which could have appeared on the bill of fare which were not chosen. I remember of noticing that they had beef, mutton, ducks, geese and eggs that do not appear on the dinner list. I also noticed that they have produced several kinds of berries that they did not draw on for the meal.

The buildings on the Eastgate farm are very well sheltered by the tree plantations and the chilling winds of October 26th did not penetrate noticeably about the farmstead. The trees, shrubs, and flowers that adorned the place made it very home-like and attractive to all who saw them.

I regard this the most unique farmers' institute lesson that I have had the pleasure of participating in in the State of North Dakota.

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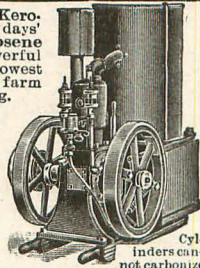
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A library for every home is being made a reality by the North Dakota Agricultural College. The Extension Department has solved the problem with the Package Library.

What is Package Library? It is a package made up of a number of articles from books, magazines or bulletins on some subject, as Rotation of Crops, Alfalfa, Alkali, Alkali Soils, Commission Form of Government, etc., etc. Subjects that have two sides are discussed from both standpoints. It includes subjects on agriculture, horticulture, domestic science, science, civics, biography, etc.

For Whom. These libraries will prove particularly valuable for the member of the farmers' club who wants to prepare a

paper or talk, for the student who wants to write an essay or oration, or prepare for a debate; for the club woman who wants to get up an address, for the editor who wants to prepare an article, for the doctor, lawyer or business man who has an address to prepare. It will contain the information that it is usually so hard to find, when one wants it bad. Provision has also been made for supplying material for declamations, dialogues and amateur plays.

How to Secure. Any one interested should write to A. G. Arvold, Agricultural College, N. D. for a copy of the Extension, Vol. 5, No. 1, which gives complete information as to the subjects on which material is prepared, and how to secure one of these libraries or declamations or dialogues by merely paying the express or postage.

Elementary Agriculture

McNeal, C. James, Editor

RED CLOVER AND ALFALFA

McNeal C. James

Red clover and alfalfa are two forage and hay crops which should receive more attention in our state than they are now getting. In the first place these crops have a very beneficial effect upon the soil. They improve the physical structure of the soil because of their large deep root systems. But the most important effect upon the soil is the addition of the plant food, nitrogen. This food element costs about one-third more than any other, if bought in commercial form, and is also the first element to become deficient in ordinary soils by continued cropping. While soils usually become short in this plant food because they do not contain large quantities of it, the air above the soil is nearly 80 per cent nitrogen. Some one has figured, that there is enough nitrogen above each acre of soil to produce 100 bushels of corn per acre each year for 700,000 years. But corn or wheat would starve to death for want of this food if their roots were in poor soil, even tho their leaves were bathed in air containing this large quantity. There is a family of plants known as legumes which have the power to make use of air nitrogen. Legumes are those plants which grow their seeds in pods like peas and beans. Alfalfa and red clover belong to this family.

Upon the roots of these plants grow bacteria, small microscopic plants which can take hold of air nitrogen and make use of it, then leave it for the use of any plant which grows in the soil where the bacteria were. Hence the value of these plants to the soil.

Besides their value as soil improver they are very valuable crops for producing hay for feed. Farm animals need three main food principles to supply their body wants;

these are: carbohydrates, the main work of which is the production of energy in the animal body; fats, which produce heat, mainly; and proteids whose duty it is to build up the tissues of the body, such as bones, muscle, hair, etc. Then much protein is required to produce milk and eggs. Foods which contain a good per cent of proteids are higher priced than those which contain a large amount of carbohydrates or fats. These foods are very valuable for feeding dairy cows.

An experiment was carried on at the Illinois Experiment Station in which a comparison was made between alfalfa and timothy hay and alfalfa and bran for dairy cows. In this experiment sixteen cows were used, these cows being fed for twenty-five weeks. One-half the number were fed upon mixed grain, corn stover and timothy hay; the other half were fed the same except alfalfa was used in place of timothy. It was found that the ration containing 10 pounds of alfalfa hay produced 17% more milk than when the same ration with timothy in place of alfalfa was fed.

They found in a similar experiment that 8 pounds of alfalfa was equal to the same amount of bran when substituted for it in a ration. The milk obtained while these experiments were running was sold for \$1.30 per 100 pounds. At this price for milk, alfalfa hay proved to be worth \$10.86 more per ton than timothy.

Alfalfa should be sown on ground which grew corn or potatoes the year before. The ground should be plowed early, and worked up fine. It should be harrowed about every seven to ten days until seeding is done. The seed should be sowed without a nurse crop in the latter part of April or the first of May. From 12 to 15 pounds of seed should be sown to the acre.

A good application of barnyard manure should be applied before seeding and the soil should be inoculated with bacteria. This can be done by scattering about 200 pounds of soil from an old alfalfa field upon each acre with the manure, or the bacteria may be obtained from the Department of Agriculture, Washington, D. C. Inoculation is necessary for success. When the alfalfa is from eight to ten inches high it should be clipped with a mower to destroy the weeds which may be in it. It then should be allowed to grow without cutting the remainder of the first season that it may be protected during the winter. It should be cut for hay when about one-third of the heads are in blossom, or when the lower leaves begin to turn yellow.

Red clover is very generally grown in the United States north of the Gulf States and east of the 100th meridian. It is the most common crop. Red clover should follow a hoed crop if possible. It is sown at the rate of about ten pounds per acre and is quite often sown with a nurse crop as wheat or barley. If the ground has a tendency to be dry it is best to sow it alone. Clover is seeded early in the spring. To insure success, the ground should be inoculated as in alfalfa. It should be cut twice a year. The first time when about one-third of the heads are brown. The second cutting is usually allowed to get ripe and is then cut for seed. Alfalfa will live and grow for many years, but red clover is not much good after the first year's crop is removed. While red clover cannot stand as much drouth or cold weather as can alfalfa, it is proving a success in many parts of the state. The Agricultural College has obtained a seven-year average yield of 35 tons of hay per acre. Because of their effect upon the soil and because of their great value for feed these crops should receive much attention in North Dakota.

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Seasonable Receipts

Pie Crust

One and one-fourth cupfuls of flour, pinch of salt, a small pinch of baking powder, one-half cupful lard and water to roll.

Irish Apple Pie

Pare and take out the cores of apples, cutting each apple into four or eight pieces according to their size. Lay them neatly in a baking-dish, season with brown sugar and any spice such as pounded cloves, cinnamon or grated lemon peel. A little quince marmalade gives a fine flavor to the pie. Add a little water and cover with puff paste. Bake for an hour.

Mock Mince Pie

One cupful each of sugar, bread crumbs and water, one-half cupful vinegar, one tablespoonful butter, one teaspoonful each of cloves and cinnamon, one cupful raisins; boiled. This makes two pies.

Cranberry and Raisin Pie

One cupful cranberries and one-half cupful raisins chopped, one cupful sugar and two tablespoonfuls flour mixed. Add one cupful boiling water and one teaspoonful vanilla.

Bread Pie

One cupful water, one cupful sugar, One cupful bread crumbs, four tablespoonfuls vinegar and nutmeg to taste. This is like apple pie. Bake with two crusts. To be eaten when cold.

Apple Custard Pie

Into a cupful of stewed and strained apple stir one cupful sugar and one-half teaspoonful grated nutmeg. Mix one cupful thin sweet cream with the apple; then the beaten yolk of one egg. Add last the beaten white of the egg. Bake with one or two crusts. With one crust serve with whipped cream on top.

Squash Pie

One cupful squash, one-half cupful sugar, one teaspoonful butter, one-fourth teaspoonful each of cinnamon, ginger, and nutmeg, one heaping teaspoonful flour. Cook squash until perfectly dry, then mash thru a sieve while hot. Place ingredients for pie on stove; warm and beat thoroly; add two cupfuls of rich milk. Line a deep pie tin with crust (paste), pour in mixture and bake. If eggs are wished, add two to each pie, omitting the flour.

Pumpkin Pie

One cupful stewed pumpkin, one cupful sweet milk, a pinch of salt, one-half cupful sugar, one well beaten egg, one teaspoonful cinnamon, one-half teaspoonful ginger, and a little melted butter. Mix well and bake in one crust.

If you tuck the upper crust under the lower crust and press it together with a

fork your pies will not stick to the tin, nor will the juice run out.

Winter Salad

Celery, boiled beet root, white cabbage (raw), and cold (cooked) fowl, equal proportions of each; chop all fine; dress with mayonnaise sauce and garnish with lettuce leaves.

Pea Salad

One can peas (drained), one-half pound chopped cheese, one quart half sweet cucumber pickle chopped, a few stalks celery chopped. Pour over this a cupful of good salad dressing and mix thoroly.

Waldorf Salad

One cupful apples, cut in cubes; one cupful of celery; one-half cupful English walnuts. Serve on lettuce leaves with a salad dressing, garnish with half walnuts. This makes a good salad also with less celery and nuts.

Corn Mush, Fried

Cut cold mush into slices, dip in flour and fry in hot butter. Serve with syrup.

Pigs in Blankets

Wrap oysters in slices of bacon and fasten with tooth-picks. Fry brown and serve on toast.

Creamed Liver

Boil calves' liver in salted water until very tender. Drain and chop fine. Make a cream sauce of one tablespoonful butter, melted; into which stir one tablespoonful flour, adding gradually one cupful warm milk. Beat until smooth: then add chopped liver and bring to a boil. Pour over slices of buttered toast, and place a thin slice of fried bacon on each piece.

Baking Hints

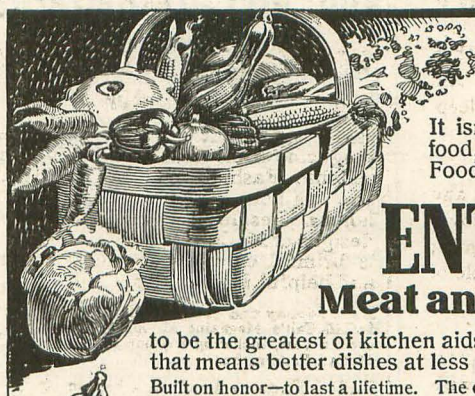
If the turkey is placed in the roasting-pan with the back upwards instead of the breast, the meat will be much more juicy. The juices can then run into the meaty portion of the fowl instead of away from it. Allow about twenty minutes to the pound for the roasting.

Pork chops, mutton chops and veal cutlets are all much better baked in a dripping pan than fried. Rolling each piece in bread crumbs makes a nice change. Veal needs a few bits of butter as well as the salt and pepper. Have the oven hot so that the juices will not escape.

Shells for oyster or chicken patties should be baked on inverted gem tins. If crusts for one-crust pies are baked on inverted pie tins there will be no danger of the edges falling down.

Noodle Soup

Add noodles to beef or any other soup



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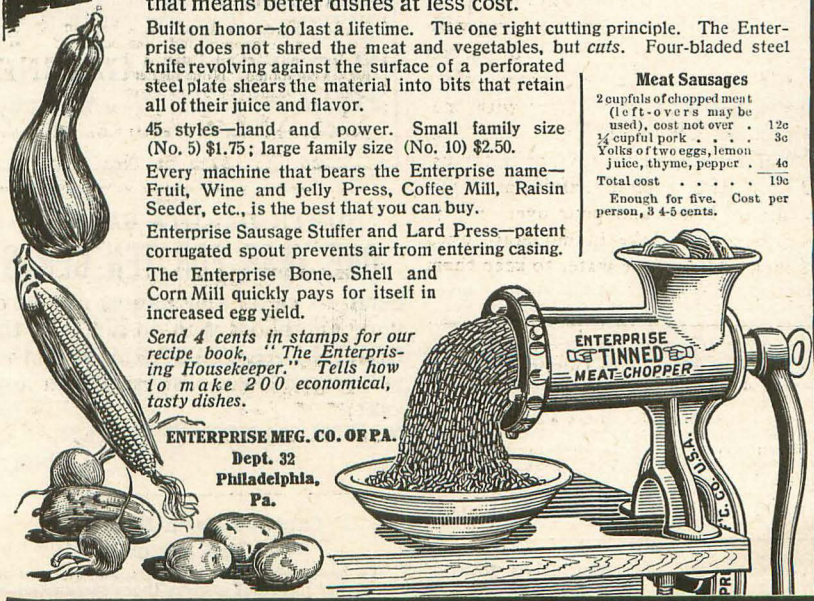
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1/4 cupful pork	3c
Yolks of two eggs, lemon juice, thyme, pepper . . .	4c
Total cost	19c
Enough for five. Cost per person, 3 4-5 cents.	



after straining. They will cook in 15 or 20 minutes and are prepared in the following manner: To one egg add as much sifted flour as it will absorb, with a little salt. Roll out as thin as a wafer. Dredge very lightly with flour. Roll over and over into a large roll; slice from the ends. Shake out the strips loosely and drop into the soup.

White Soup Stock

Is made of chicken or veal or a combination of both. Boullion is a clear strong soup. Broth is the thin soup in which the meat has been cooked without any vegetables. Stock is the basis of all soups. Purée is made by boiling vegetables slowly in broth and sifting when tender and diluting with water or milk till consistency of thick cream; must be well seasoned.

Mutton Broth or Soup

Two or three pounds of mutton; trim off all fat and cover with cold water. This removes the woolly taste. Boil tender and before serving add flour, wet in cold water to thicken a little. Season with salt, pepper and celery salt.

Escalloped Oysters

(Quantity for 25). Three quarts oysters in bulk, one pound melted butter, two pounds crackers. Roll crackers fine and season with salt and pepper. Butter the baking-dish; then put in a layer of crackers, add milk and juice of oysters to moisten well. Next add a layer of oysters and season well with butter, then another layer of crackers and oysters and lastly crackers. Do not make too deep. Bake at least one hour.

Baked Onions

Boil small onions until tender; drain and place in buttered baking-dish. Cover with a rich white sauce and bread crumbs; put a little butter on top and a sprinkle of sugar. Bake until crumbs are brown.

Mother's Baked Beans

Pick over and soak over night one quart navy beans. In the morning cover with water and set on back of stove to parboil one-half hour. Drain off water, place beans in deep earthen bean pot with one-half pound salt pork. Mix one teaspoonful salt, one-half teaspoonful mustard and two tablespoonfuls molasses; put this on beans and pour over enough water to cover. Bake in moderate oven six hours, adding more water to keep them moist.

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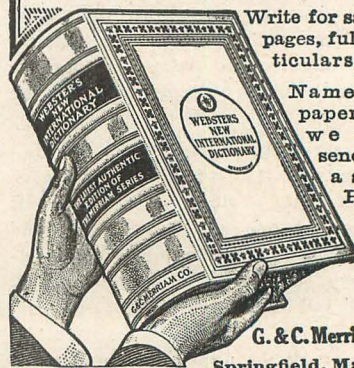
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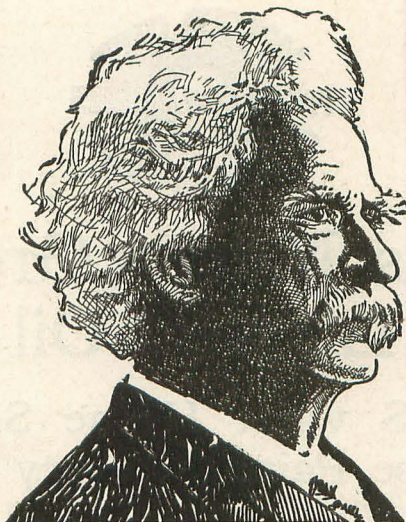
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